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ORAL PROPHYLAXIS.

BY DR. D. D. SMITH, PHILADELPHIA. READ BEFORE THE CINCINNATI
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In discussing with you this evening matters pertaining to oral prophylaxis—properly the prevention of disease in the mouth, it is my purpose to give emphasis to certain former teachings relating to it, and to present for your consideration some more recent and important observations which materially enhance the strenuous import and the benefits in this new field of research. The first paper relating to this matter was entitled "Prophylaxis in Dentistry," and was read before the Northeastern Dental Association, Oct. 18, 1898. It was the expansion of a talk before the Washington City Dental Society the preceding February.

This paper, the outgrowth of four years of investigation and experimentation in this new field, was published in two of the leading dental journals—the *Digest* and the *International*, but excited little or no comment, and there was no editorial mention. In October, 1899, having added another year to previous successful experience, and having evolved the "annual fee" scheme for the more attractive presentation of this treatment to patients, I gave a talk on the "Business Aspects of Prophylaxis" before the Northeastern Dental Association, and made a practical demonstration of the methods of treatment. This talk, given at the request of one of the members, related more to the business than to the scientific aspects of the subject, and because of this was never prepared for publication.

In May, 1900, it was my privilege to have, on special invitation, two professors from a leading dental college of our city examine some cases from my private practice which had been kept rigidly for about two years under the system of prophylactic treatment herein advocated. About a dozen patients were subjected to careful

examination. The inspection of these cases seemed both a revelation and gratification to these gentlemen, and through them arrangements were at once made to bring the subject before the Academy of Stomatology in Philadelphia, where I read, May 20, 1900, the second paper on "Prophylaxis in Dentistry." This was published in the *DIGEST* September, 1900, and in the *International* December, 1900. In June, 1901, I read before the New York Institute of Stomatology the paper "Oral Prophylaxis" which appeared in the January, 1902, *DIGEST*, and in the December, 1901, *International*, and this evening I am permitted the pleasure of reading the present paper before you.

In previous writings I have clearly set forth the fact that tooth-decay always begins at some vulnerable *tooth surface* and, piercing the enamel, proceeds along the lines of the tubules toward the pulp. The agencies of tooth resolution or decay are opposed in their progress principally by the structural consolidation of enamel and dentin. A living pulp in a tooth opposing the progress of decay with its vitality is a preserving force scarcely sufficient to demand recognition.

The human mouth is practically a miniature caldron into which all manner of agencies inimical to the teeth find their way. Of these, some pass through without appreciable impression, and some, finding lodgment, play an active and important part in tooth destruction. There are foods, both solids and liquids, foods for nutrition and materials for ferment; there are acids—natural, artificial and mineral; salivary and mucous secretions, varying in quantity and character; there are toxic excretions from mucous surfaces, gums, tonsils, fauces and tongue; there is sedimentary matter from saliva, mucus and liquids, with starch, sugars and oleaginous deposits all in conglomerate destructive activity. And, as if to heighten and intensify the decay-inducing tendencies of those agencies, the temperature of the mouth, which is maintained at the high normal of 98°, is often raised several degrees above this through the taking of solids and liquids at high temperatures. It would be difficult to suggest combinations or conditions more favorable for bacterial culture and the induction of caries than the usual conditions of the human mouth.

That some teeth are constituted to successfully resist the destructive action of these agencies, while others readily yield to them; or

that the agents themselves are more manifest and virulent in some mouths than in others, does not in the smallest degree militate against the fact that all decay of the teeth begins at the surface. Experiments—empirical or scientific—for producing artificial decay of teeth in man or animals are and must ever be incomplete and unsatisfactory, as each case has its own peculiar environment, and specific investigation alone can determine the cause of it.

Tooth environment is the one condition above every other which demands recognition and investigation at the hands of dentists. Until this matter is satisfactorily investigated, and due attention given to the part which it plays in tooth destruction, decay and redecay, in spite of "germicides," "cavity preparation," "antiseptics," "filling materials," "extension for prevention," and a host of other specifics, will go steadily forward. That caries is due to tooth environment is readily demonstrable by the test of extraction. If we remove a decayed tooth having a living pulp from the mouth, it is a well-known fact that all decay in that tooth is at once arrested; but to make the test absolutely indisputable, let us take a devitalized tooth, sometimes but improperly called a "dead tooth," conceded to be subject to more rapid decay in the mouth than a similar tooth with a living pulp. Let a pulpless, decayed tooth be removed from a mouth where the environments are such that resolution is rapidly taking place, and let it be placed in water, alcohol or glycerin, or simply exposed in the air, and we know that decay is immediately arrested and that further disintegration comes only with the lapse of years.

It matters not whether decay is due to bacteria, to acids, to electrical conditions, or to all in combination, the *control* of decay is wholly dependent upon the control exercised over environmental conditions. This is no longer theory, for practical operations in the mouth in scores of cases extending over seven years of experimentation have fully proven the power of environment in the induction of decay, and the feasibility of its control has been clearly demonstrated. As the destroying agent is always external to the tooth, the one effectual bar to the beginning of decay is systematic, forcible change of tooth environment from bad to good.

Having reached this statement, permit me by way of contrast, and before attempting further elucidation, to read a short article entitled "Odontology," by Arthur S. Underwood of London, from

a medical journal which came to my notice a few days ago. This has a bearing upon a paper entitled "Recurrence of Caries Under Good Fillings," by Dr. H. A. Smith, which was read before your society in May of last year and published in the February, 1902, DIGEST. Comment upon it therefore seems quite in order and may very properly be regarded as part of the original discussion. Mr. Underwood says, "One of the few interesting contributions to dental pathology during the past year has been a research upon the power at our command to arrest dental caries, from the pen of J. Choquet. His thesis is concerned with the possibilities of antiseptics in arresting caries that has already commenced. He has endeavored to reproduce in the teeth of a live sheep the pathological changes peculiar to caries. With this object he created cavities in the sheep's tooth, and inoculated them with varieties of cultures procured from caries that had taken place under apparently satisfactory fillings. The method he advocates is as follows—The cavity is carefully cleaned, then dehydrated, not with hot, but with lukewarm air, followed by treatment with different strengths of alcohol, gradually rising to absolute alcohol. Then the cavity is dried with hot air, and the alcohol replaced by a mixture of alcohol, xylene, essence of geranium and hydronaphthol. This dressing is allowed to remain for twenty-four hours in the cavity, protected from the fluids of the mouth by a gutta-percha stopping, and the result has been entirely satisfactory; whereas, if the succession of different strength of alcohol had been omitted, the caries reappeared after a certain lapse of time." (This bewildering array of medicaments, with its confusion in methods ostensibly for sterilization of a cavity after removal of decay, is both burdensome and unnecessary, and fastens the impression that the whole process is the highest empiricism. Recurrence of decay *under* a properly made filling is of rare occurrence, so rare indeed that it may be eliminated as a result. If "caries reappears after a certain lapse of time" under or around a filling, the consensus of opinion in the profession in America has been for fifty years and more that such decay is due and directly chargeable to defective manipulation or some untoward condition affecting the operation. The defect may be in manifest imperfection in cavity preparation, or it may appear in lack of control of adverse conditions in the process of filling, or it may be in lack of adaptation of filling material itself, and failure is about as

common in one instance as the other, but "the omission of different strengths of alcohol" in the preparation of a cavity does not enter into the case in the smallest degree as a determining factor. Inefficiency in operating seldom or never apprehends the true cause of recurrence of decay in a filled tooth.) "M. Choquet maintains that the hydronaphthol has no mischievous effect upon the pulp. He concludes by stating that the odontoblast cells secrete an appreciable amount of secondary dentin in eight days. This may be true, but it sounds almost magical in its rapidity. In experimental research of this kind it must always be borne in mind that it is not absolutely safe to argue from the lower animals to man. In the sheep the chemical composition of the tissue is not identical with that of human dentin and enamel, while the arrangement of the pulp tissue, and, in fact, the mode of growth and nutrition, is *profoundly* different; and as the tissues differ, so may their readiness to accept and retain the various reagents vary also."

In Dr. Smith's paper we find some details connected with the experiments of Choquet which were omitted by Dr. Underwood. He says, "A small drop of the bouillon which had been inoculated twenty-four hours with the pure culture was deposited in the bottom of the cavity and covered with a thin platinum cup. The cavity was then filled with cement. All precautions were observed throughout the operation to maintain an aseptic condition. Nine months afterward the animal was slaughtered and the following phenomena were observed—The dentin, instead of being white, was of a yellowish hue and was also softened. The softening, reaching a slight depth, was very plain and more noticeable at the portion of the cavity where the diameter had increased. Thus was demonstrated the *possibility* of producing artificial caries in a living animal."

To the casual observer this would seem to be a case on the order of "original scientific investigation," but on careful inspection I think we shall find it an investigation with the "smack" of science only and a long-drawn-out procedure wholly destitute of beneficial results. Let us examine it for a moment—"A sheep was selected for the experiment because of its *docility* and also the resemblance of the animal's anterior teeth to the human incisors. It cannot be consistently assumed that there is any true analogy between the tooth of a sheep and that of the human incisor. If there is resemblance in composition, there is none whatever in environmental sur-

roundings, nor in the elemental conditions of nutrition, as the human incisor belongs to the omnivora and the sheep's tooth to the true herbivora. In a cavity made in the labial surface of a sheep's tooth a drop of inoculated bouillon was deposited; it was then covered with a thin platinum cup, and the whole—bouillon (moisture) and platinum—was covered in the cavity with cement.

We know absolutely nothing about the details of these operations, but we can imagine something of the difficulties attending them, and the inference of imperfection at every step is perfectly justifiable from the description given. Could the imagination picture anything more at variance with accepted methods of practice than confining moisture of any kind with a cement filling under a platinum cup in a cavity in a tooth! Such an operation would form a combination for the incitement of decay which no tooth, animal or human, could resist. Conditions for the prevention of decay in a freshly made cavity are, exclusion of moisture, perfect apposition of filling material with the walls of the cavity, and imperviousness of the filling material itself. The conditions as described in these experiments are exactly the opposite of this. Infected moisture in a cavity, confined by a platinum cup would render perfect adaptation of the filling material impossible; but all this in the experiment was confined in the cavity, not by an impervious filling material, but by one of the most unreliable bacteria-generating materials—cement—(and we are not even told the variety) in the whole list of filling materials. After nine months the cavity was found softened to a slight depth, and more noticeable at the portion where the diameter had increased (just the point where the filling was most defective) "and thus," we are told, "was demonstrated the possibility of producing caries in the tooth of a living animal." The wonder is not that there was slight decay, but that under such decay-inciting treatment there was at the end of nine months any tooth at all remaining.

Even assuming a fair analogy, and that the operations were conducted in accordance with really scientific methods, and each step accurately and fully tabulated, what educational end has been attained? None at all. The only claim is, that the possibility of inducing decay in the lower animals has been demonstrated. If this were true, and as yet it is far from a clear demonstration, what possible good is to come from it? This paper of Choquet's, in so far

as it has an influence, will stand for imperfect operations on the teeth, and failures, properly chargeable to indifferent methods of operating, will be ascribed to bacteria in the dentinal tubules.

Unless my instincts and conceptions of dentistry are all radically wrong, the object of our profession is *to prevent disease in the mouth* and permanently preserve the human teeth for every service required of them.

The results of demonstrating the possibility of producing caries in the tooth of a sheep are neither helpful nor inspiring. This unsatisfactory experiment will neither add to the sum of our knowledge, increase our usefulness nor embellish our attainments. It is to be regretted that the journals on this side of the water are manifesting a disposition to republish these so-called experiments as in the interests of dentistry.

It seems to have been left to a Canadian dentist, in an article which appeared in an Ohio journal for February, to fill up the measure of our humiliation before the medical and scientific world. This article, entitled "Vaccination a Prime Factor in the Destruction of Children's Teeth," is probably the most illogical, inconsistent and altogether senseless that has ever been published in a journal devoted to science.

Let us now return to the consideration of our original proposition, that caries of the teeth is wholly chargeable to environmental conditions. The foundations of this statement are, we believe, immovable and will stand against all assaults or contradictions. Ultimately it will be determined that not one but many agencies are at work in the production of tooth decay. That there are many favoring conditions and many influences besides the pernicious activity of specific agents to be considered in accounting for the phenomena of tooth decay is a matter beyond question. As there are many grades of tooth structure, so there are many grades of consolidation in tooth material; and these conditions control and are practically independent of the vital principles within the tooth, which opposes but feeble resistance to the encroachments of external agents, of which toxic exudations and the products of bacteria are most prominent and active. We may then assume with confidence that the beginnings of decay are always at the surface of the tooth, and that the cause, whatever we may decide it to be, must reside in the menstruum in which the tooth is perpetually enveloped.

At no time perhaps in the profession's history has there been greater laxity or less genuine effort in the direction of prevention, than at the time of the promulgation of these theories of prophylaxis. Text-books and periodical literature, college teachings, society discussions and clinical demonstrations, have without exception been in the direction of *restoration* following the destructive process of decay, all specially emphasizing the importance of *mechanical* appliances and manipulations in dentistry. The principles of prophylaxis have found no consistent advocacy in the profession, neither has there been any earnest effort in the direction of prevention.

As showing the spirit of the profession, permit the following citations—In the discussion following my first talk on this subject in Washington one gentleman said, "I guess we don't need any one to come down here from Philadelphia to teach us to clean teeth." In April, 1900, a much respected professor in one of our colleges remarked to one of his patients: "Dr. Smith has got a great craze for cleaning teeth, but I don't approve of it." One operator said, "It will polish away the enamel from the teeth." (If this man could have comprehended the real effect of polishing enamel surfaces with pumice, and had had the frankness to declare it, he would have said, "With each treatment the enamel improves in character and texture; it becomes more resistant and consequently less liable to attacks from bacteria, acids or any injurious agent." The only "polishing away" that is done is of the agents of resolution.) Another remarked simply, "I don't believe it." Another, expressing his contempt in the language of the street, said, "This cleaning of teeth once a month is all tommy rot." A few, unwilling to commit themselves to an opinion, simply looked wise and smiled. One gentleman, fully convinced of the value of the discovery, delivered himself as follows—"Yes, this is all right, but if I adopt this system and stop decay what am I going to do," making exhibition of a spirit wholly antagonistic to the instincts of true professionalism.

It is a pleasure to record, that since the reading of the paper and the demonstration of cases before the Academy of Stomatology in June, 1900, there has been a marked change in sentiment on the part of the leading men in Philadelphia and other places. The incredulous smile is giving way to thoughtful investigation, and the simple declaration of unbelief is changing to hearty commendation

and approval. Dr. Kirk, after examining a number of my cases which had been under treatment from eighteen months to two years, said, "If our theories of decay are correct, this is the solution of it." A leading professor in the University, after a similar examination of cases, said, "I am thoroughly converted to your views and to your methods of treatment." Dr. Truman, writing Oct. 26, 1900, and later of the paper "Prophylaxis in Dentistry," said, "I regard it as one of the most valuable papers of recent production, marking a decided advance in practice. * * * While it is contrary to our rule to publish as original anything appearing in another journal, I feel that I must set this aside at present, in view of the importance of the subject. * * * I shall be pleased to have you continue this matter for the January issue. I find that if it is desired to make an impression the subject must be repeated over and over again. This, to my mind, is important and *should be driven into professional thought*. * * * I have fully endorsed your method as a system, and only this week in lecturing to my class stated that your system of prophylaxis would in all probability be the ruling practice of the twentieth century."

Permit me to quote from the discussion following the paper on "Prophylaxis in Dentistry." "Dr. E. T. Darby: Perhaps I cannot say anything more valuable and convincing than to testify to what I saw a few weeks ago in Dr. Smith's office. He had present about a dozen patients to illustrate this method of treatment, and when I tell you it was a revelation and an inspiration to me, I express only about half of what I then felt and feel to-night. I have never seen teeth so absolutely clean and polished upon every surface as those that I saw there. I do not recall a single instance of a mouth with any deposit, with the exception of a young man who smoked almost constantly. The teeth seemed to present a peculiar polished surface, which I could liken only to that of a ball polished on a lathe, and their whole character seemed changed. You have all seen in the mouths of some of your patients, where the teeth have been the best, a peculiar polished look which you have not found in the mouth of your average patient—a peculiar ivory-like look of hardness throughout the whole enamel. I saw that in young girls, in middle-aged persons, and in two quite advanced in life in Dr. Smith's office; and it made me very careful about the methods of my patients, and I preached to them as never before. I

have said, 'Your teeth are dirty,' while they might not have been worse than they were at any previous time. Since I saw those cases I have taken better care of my own teeth, and the indirect influence on my patients has been for good. When Dr. Smith says he prevents decay I think he does. I believe that as we remove the bacteria from the surface of the teeth by polishing, as he does, the teeth will not decay. There was only one point I could not understand—how his patients could have teeth so clean upon the proximal, labial and lingual surfaces without the use of floss silk; but they were free from deposit, debris, or anything else, and the gums seemed to cling to the teeth as though they were part of them." Dr. E. C. Kirk: "I am very glad to add my few words of testimony, but I cannot add anything to what Dr. Darby has said. The mouths were free from the irritating effects of the bacteria, and we know infection may manifest itself in many ways. The thing that strikes me most forcibly about what Dr. Smith has accomplished is this, that he seems to be the only man who has actually accepted at full face value the statements and results of investigation of those who hold to the idea that caries of the teeth is the result of the environment of the teeth. Its cause is external to the teeth."

Passing over much of commendation since received from many parts of the country, allow me to make a brief extract from a private letter from Dr. A. H. Brockway to Dr. G. Alden Mills: "I quite agree with your estimate of Dr. D. D. Smith's ideas in regard to the care of the teeth, and think his the most valuable and informing paper that has appeared for a long time. He is on the right track, and this paper should be read in every dental society at least twice a year. You and I of course take it in at once, for it is in the line of our thought and practice, but the great mass of dentists will not appreciate nor greatly profit by it." No member of the profession who has seen the actual results from this system of treatment has had aught but commendation for the conception of it and the methods employed for its successful development.

It may not be out of place here to indicate something of its reception on the part of patients. The recasting of the theories and long established methods of practice which we ourselves have instilled into the clientele of dentistry, through the enunciation of such a radical and revolutionary change of plan as is implied in this system

of oral prophylaxis, has proven by no means an easy task; and in the beginning it was discouraging at times almost to the point of abandonment. Some said at once and without hesitation, "That seems a most sensible method of dealing with the mouth and teeth, and I will adopt it." Others said, "Attend to the teeth once a month! Oh, I haven't time." In but one instance, and that where I insisted on the adoption of the treatment for the benefit of two children, have I lost a patient. In this case, upon urging it a second time, I was summarily ordered to cancel all engagements for the family and forward a bill to date. The loss of this family has been far overbalanced by an awakened enthusiasm and the genuine gratitude of many patients, who are regularly presenting themselves, and acquainting others with the benefits of the system.

The almost complete immunity from decay; the great improvement in color and general appearance of the teeth; the diminished sensitiveness of the dentin; the tightening of many teeth which had become loose; the relief from undue sensitiveness of the gums; their marked adherence to the necks of the teeth; the beautiful color and striation appearing in them; the cleanliness and general comfort of the mouth; the universal improvement in the character of the breath, are all matters attracting notice, inspiring confidence and awakening most lively interest.

The problem in the beginning was how to best induce patients to submit to treatment that a fair test might be made, carrying data in proof of it. Having some youthful patients, especially two young girls, whose teeth were being much injured by seemingly uncontrollable decay, with whom I greatly desired to make proof of the treatment, to eliminate the barrier of expense the proposition was made to care for the teeth by the year for a certain fixed sum, and in the beginning this was just enough to cover the time of the twelve treatments. The contract was simply an understanding that the patients should present once a month, or as often as I might deem best, for treatment. This enabled me to effect a complete change in the environment of the teeth at least once a month; toxic matter, whether in the form of excretion or accretion, was removed from the mouth and teeth at regular intervals, and the internal life of the tooth—the pulp life—was stimulated to a more vigorous activity by means of this process of hand-polishing on the external surfaces of the teeth.

Although this system is diametrically opposed to all former theories, conceptions, and methods of practice, about twenty-five patients were brought under the treatment the first year, and by this means the fact was established that in the most unfavorable conditions fully ninety per cent of decay could be eliminated by the treatment, and in more favorable conditions all decay was arrested. Wherever this system of oral prophylaxis has found typical exemplification, whether in childhood, youth, middle life or old age, most favorable results have universally followed. In every case where treatment has been instituted for the deciduous teeth there has been *complete* immunity from decay, and the teeth have shown marked improvement in structural composition. Alveolar development also has seemingly been much benefitted.

The unsavory but very unjust reputation which attaches to third molars is due to their practically universal eruption into and continuance in an environment destructive of tooth structure, all of which is averted through this system of prophylactic treatment.

The exaltation by dentists themselves of modern dental instruments, appliances and special methods has engrafted upon the mind of the general public the idea that dentistry is the filling of a decayed tooth, the making of a plate, or perhaps the insertion of a crown of doubtful utility. It would seem at times as though skill in the dentist were thought to be synonymous with the glitter of gold in and on the teeth. Hence the so common use of that barbaric appendage—the gold crown, that inexcusable substitute for a tooth which may be more fittingly characterized as the dental monstrosity of the present civilization. It is so repugnant to all esthetic culture as to render it absolutely inadmissible except as it may serve upon the root of some hidden molar. And this prohibition applies with equal force to its use in cases of bridgework as to individual crowns. The exhibition of gold fillings in the front teeth is wholly unnecessary and the practice ought to be frowned upon until it is abandoned.

Not content with the use of gold crowns on natural roots, there has arisen a "gold capsule implantation"; in other words, a gold root implantation for sustaining crowns and bridges. Clyde S. Payne in the *Pacific Dental Gazette* for October, 1900, says: "Dentistry is not behind in the advancement made in modern surgery. I can offer you now with certainty an operation that will

revolutionize the old methods. It is the implantation or insertion of a gold capsule or root, the exact counterpart of a root extracted, or the exact adaptation of a gold capsule to an opening made in the alveolar process of any size or shape for the attachment of a tooth or any number of teeth on a bridge."

What shall be said for the status of dentistry when a journal published in the interest of dental science will lend its columns to disseminate such illogical trash as the above? Who with a sense of the benefits conferred by dentistry in the higher levels of practice can resist feelings of deep humiliation at such exhibitions of the stupidity of ignorance in the name of science?

For thirty years the boast of dentistry has been its rapid advancement, but if we inquire in what direction the answer must be, "Chiefly in the line of mechanics." Instruments have been improved and multiplied; ingenious appliances have been devised, and materials and methods of manipulation have been greatly changed for the better, but disease and decay, with all the attendant suffering and loss, move steadily onward unhindered as under the more primitive and less favored conditions. Is there nothing higher and better, nothing more enduring and more helpful in the destinies of the profession than this ceaseless round of decay and loss, mechanical substitution and repair? We believe that the subject of oral prophylaxis opens a larger field for discovery in science and no less of benefit to humanity.

Concealed beneath the debris of the oral cavity there are factors for evil not to the teeth alone, but to the substructures of the mouth and to the general system; to totally disregard which, as has been and is now done, will in the near future be adjudged criminally negligent. The prolific bacterial products of the oral cavity and the varied obnoxious accumulations on the teeth, resulting from decomposing foods and from the retained exudations of irritated, inflamed and suppurative tissues, are cemented by the viscid nocturnal mucus into a toxic mass not alone destructive to the teeth, but an excitant of pathologic conditions throughout the whole pulmonary and digestive tracts.

Under the caption "Contagion by Speaking or Coughing" an interesting series of experiments to determine the precise conditions under which disease germs are carried by droplets of saliva in speaking, sneezing and coughing is described by Herman Koeniger in

the *Journal of Hygiene and Infectious Diseases*. The main results are as follows: "The author has been able to assure himself that in an apartment where there is no appreciable current of air a person speaking, coughing or sneezing can scatter germs to a distance of more than twenty-two feet. The germs can be carried horizontally in all directions and to a height of more than six and one-half feet. They are even found *behind* the person speaking or coughing. Droplets are emitted when the expired air meets with a certain amount of resistance, hence the dissemination in speaking varies markedly in different individuals. These droplets are really microscopic balloons, having in the center a bubble of air, and when this breaks, the germ, whose specific gravity is high, falls. The dissemination of droplets is most marked after coughing or sneezing, and is specially to be feared in cases of small microorganisms—as the bacilli of influenza, plague, pneumonia, etc. The bacilli of tuberculosis, plague and diphtheria are larger than bacillus prodigiosus, but smaller than bacillus mycoides. The danger is greater as the mouth contains more of the pathogenic microbes. Washing the mouth and repeated gargling diminish the number of diphtheritic bacilli susceptible of being detached, hence this precaution has a degree of utility. Placing a handkerchief before the mouth prevents the emission of droplets charged with tubercle bacilli. In case of pneumonia it would be necessary to wear a mask. During a surgical operation no one present should speak. Measures for prevention may be multiplied indefinitely in response to this idea of scattering infection through droplets of saliva."

Here we find recognition of the fact of mouth infection, but no appreciation of the true methods of relief. Germicides will not—cannot accomplish it. Temporary suspension, as placing a handkerchief over the mouth during a surgical operation or in cases of exposure to zymotic diseases, may be of some benefit, but the only effectual relief is to be found in complete and positive eradication of bacteria and all conditions favorable to germ culture from the mouth. This is only change of environment and environmental conditions.

It is a matter yet to be recognized that relief and immunity from infection from these sources are to be afforded through the intervention of dental science alone. It may now seem to some as an ungarded statement, but it will yet be demonstrated that much of the nephritis, uremia, and many cases of bronchial and catarrhal

troubles, as well as the infection of consumption, have their origin in the retention of the exudations from oral tissues with their attendant accumulations on and about the teeth. These conditions are as yet wholly disregarded in dental diagnosis and in medical practice.

I have no sympathy with or belief in the theory that alveolar pyorrhea is constitutional in origin, or that it is in any sense a condition of gouty diathesis. Pyorrhea is wholly local in its origin, and becomes constitutional only as its poison is introduced into the blood by the perpetually vitiated oral emanations and secretions. Contagion from toxic matter on the teeth and in the mouth has in waking hours a short and direct route into the blood through the digestive tract, and one equally direct by the pulmonary tract in sleep. That practice which maintains the most perfect sanitary conditions of the mouth and teeth will best conserve the general health. I have no case under treatment which has not been benefited in the general health.

One of the most notable of the beneficial results of the prophylactic treatment as herein outlined is the elimination of offensive odors from the breath. It is a result to be looked for in every patient, young or old. The time will surely come when it will be an offense, intolerable and inexcusable, for one to appear, as is now so common, with a breath emitting contagion, through lack of proper attention to the mouth and teeth.

I have spoken of the prophylactic treatment as a process to effect and maintain complete change in tooth environment; and such it is, and the beneficial results are in direct ratio with the accomplishment of this result and the perfection with which it is maintained. It consists in the *forcible* and *positive* change of tooth surroundings from bad to good; from harmful to beneficial; from acid to neutral; from culture-producing plaques on the teeth to a germ-freed immune surface. But is this feasible or practical, or is it a scheme of the imagination only? In answer to this let me here give some attention to the methods pursued. Briefly stated, treatment of the teeth for complete change of environment consists in thorough removal at frequent and regular intervals—once a month has thus far proved most satisfactory—of all accumulations, whether solids, inspissated excretions, semi-solids, or bacterial formation, from all the exposed surfaces of the teeth, leaving the enamel, or

whatever of the tooth may be exposed, thoroughly polished and thus in the best condition to void hurtful deposits and equally to favor all efforts of the patient in the direction of cleanliness.

It is readily demonstrable that to secure and maintain true cleanliness in the mouth, even on the part of the most painstaking, is impracticable if not impossible without the direction and assistance of an expert and intelligent operator. There are calcific deposits constantly increasing; the more immediately hurtful acidulated bacterial accumulations; inspissated mucus retaining decomposing particles of food and furnishing most favorable conditions for bacterial culture and the retention of excretions, not alone from the gum margin, but from the whole gum surface. Besides these, there are irregularities, formations and positions inaccessible to all ordinary methods of cleansing, which implies the perpetual retention of matter inimical to the teeth and gums. These injurious accumulations with their equally injurious emanations, hitherto overlooked and disregarded by physician or dentist, are not only causes of decay, but are equally causes of gingivitis, absorption of alveolar structure, and recession of gums, which latter conditions are far more to be dreaded.

Recognition will yet be made of the important fact that to the *presence* of foreign matter on and about the teeth, rather than to the *quantity* of it, the beginnings of decay and pyorrhea are wholly attributable. The deleterious influence of a breath perpetually loaded with offensive emanations from this source, especially during seasons of salivary inactivity, as in sleep, will ere long be disclosed as an important factor in many pulmonary and digestive disorders, and will be taken account of in medical diagnosis and treatment.

Many who have given the matter but passing notice seem unwilling to believe that for the accomplishment of this object there can be any distinguishing difference between wheels operated by power and the orangewood sticks and pumice in the hand, guided by educated intelligence. To such it may be said, a true comprehension of this treatment necessitates abandonment of all engine wheels and a resort to the hand use of the orangewood sticks and pumice *alone*. In the rapid revolution of polishing wheels by power, acquirement of that stimulating energy in the tooth which is a characteristic of the hand process is impossible, and the important after-effects are entirely wanting. The delicate sense of touch is lost through the

wheel, and the surfaces treated will receive the force of the polisher uncertainly and unevenly. The wheel cannot be carried to the festoonings of the gums, the point where treatment is most needed, without injury to them. On account of the involuntary contraction of the orbicular and buccal muscles and the encroachment of the tongue, often accompanied with profuse flow of saliva, obstacles to the use of the wheel in many situations, as on the lingual faces of lower molars and bicuspid, especially in children's mouths, become insuperable. The mechanical difficulties alone, coupled with lack of adaptation of the power polishers, if there were no other reasons, point unmistakably to the diagnosing touch and the delicate use of the hand instruments.

They furnish the only rational means yet devised for the successful removal of the secretions, excretions, and any and all accumulations from the necks of the teeth and from exposed tooth surfaces; for polishing the teeth; and, last but not least, for the stimulation of the vital functions within the teeth to a condition of normal activity. No wheels, no medicament nor medication; no system of cleansing suggested to nor practiced by patients, will accomplish this end. It must be done by educated, skillful dentistry, enforced and repeated as a vitiated environment may demand it. The time limit thus far found to produce the most satisfactory results for the arrest of caries is, for frail temporary teeth, two to three weeks; for adults, once a month.

The benefits of this treatment may be summarized as follows: 1st. The arrest of caries of the teeth. This will be partial or entire in proportion to the frequency and thoroughness of the operation. It was decay alone which in the beginning we sought to combat, and the proven results are such that in all cases the arrest of caries in all parts of the mouth is predicted with a firm confidence; with an assurance one feels in the arrest of decay by means of a perfect filling in an individual cavity. In the teeth of some children under fifteen years of age who are under this treatment there have been in the four years a few new cavities, but I cannot recall a case where a new cavity has appeared in connection with the teeth of an adult. I am satisfied that more frequent treatment and stricter methods for the patient would have reduced the few cases in these young people, all of whom had extremely frail teeth, but all are now improving in character. The treatment will greatly retard but

nor prevent redecay under old, imperfect fillings. Strange as it may seem, delicate, deciduous teeth are even more responsive to the treatment than the permanent teeth. Where full control of the case has been given, no single instance of new decay in these teeth is now recalled.

In the case of a boy with extremely delicate teeth who has been under treatment two and one-half years, the record is as follows: At the beginning of treatment, three years of age, five cavities were filled. First year, treatment regularly every two weeks, except month of August. Second year, and to the present time, treatment every three weeks. Result: Redecay under an amalgam filling; teeth at present in perfect condition, with first permanent molars just appearing.

In cases of erupting teeth constant oversight and great care are needed. The record in these cases has been one of almost complete exemption. In a number of instances where the first permanent molars erupted under the old regime, and decayed on the occlusal, mesial, distal and buccal faces (and in one instance on the lingual as well), the second permanent molars, erupting into a better environment, are without decay and in perfect condition. Similar observations may be made from my experience with third molars. In young adults and in patients in middle life under this prophylactic treatment there has been no new decay and the teeth are constantly improving in appearance and in texture.

2d. A decided change for the better in the color of the teeth. This improvement can have but one explanation—it is the result of the stimulation due to the treatment, the vital activities within the tooth taking up and removing the old, effete, stagnant matter in the tooth-substance and replacing it with new and better material. The change in color is from an opaque, old-ivory appearance to that of clear, translucent, polished enamel, the whole giving the appearance of increased density and general improvement, denoting decay-resisting structure: the apparent stimulation from the treatment rapidly changing the color of the tooth, diminishing its sensitiveness, both externally and internally, and greatly improving its quality; changes which have impressed and astonished the author as perhaps no other results from operations on the teeth or in the mouth have ever done.

Prognosis in this matter is always good. In a number of instances

it has caused the dark brown stains in the dentin of roots uncovered by gum recession to be taken up and replaced by a perfectly normal tooth color. White spots on the labial faces of front teeth, indicative of interrupted enamel nutrition at that point, have greatly changed for the better under this treatment and in two cases the teeth have resumed a normal aspect. Other instances might be cited in evidence of the nutritive changes beneficial to the teeth, which are the undoubted result of the stimulation from this treatment.

3d. It greatly relieves sensitive conditions so commonly found in the gums at their margins, and it seems a corrective for highly sensitive dentin. Cases of filling or refilling which have been found necessary where the mouth was under this treatment have certainly suffered much less from the pain of excavating than before the treatment was instituted, and ligations for rubber-dam applications have been effected without pain.

4th. It reduces the vascularity and undue color of the gum tissue and arrests perfectly all gum recession due to local irritation; it induces festooning and striation of the gums and causes highly sensitive gum tissue to assume its normal condition of low grade sensibility.

5th. It has proven a corrective for many unnamed inflammatory conditions which, although troublesome and annoying to both patient and dentist, have been treated with a degree of indifference by the operator and suffered as a necessary condition by the patient.

Reference is here made to such troubles as alveolar fistulas opening on the gums, and having periods of purulent activity, with slight pain and little swelling, but attended with troublesome inconvenience; and to roots which may have been crowned, but from accumulation of irritating exudations at the cervical margins have become loose and sore to pressure. It has been to me a surprise and gratification to see these conditions without exception take on healthy action—fistulas to close; teeth to tighten, and the gums to change from a congested or inflammatory state to a condition of normal sensibility, striation and festooning.

6th. It may be said without fear of successful contradiction that this treatment is absolutely the *preventative* of pyorrhea; and further, it is the natural method of cure where it exists. The theory that pyorrhea is of constitutional origin, dependent on the

presence of uric acid in the blood, is not in accord with clinical observation or experience, and is without substantiation in fact. Pyorrhea is a disease of local origin due wholly to the retention of toxic matter on and about the teeth. It may be heightened by constitutional tendencies, and it may present constitutional effects; but the former are themselves engendered by the disease. My conviction is firm that constitutional expression never precedes the local irritation but that it is always dependent upon it, and that failure to apprehend incipient causes is responsible for the confusion and dread which shadows this trouble in the minds of the profession. What proof so indisputable to establish the local origin of pyorrhea as the fact that whatever good impression has been made through treatment has been by the use of local means and methods alone. The many and varied instruments for the removal of deposits; the painstaking and persistent efforts of the honored and lamented Dr. Riggs, and the multiplicity of remedies (medicaments) all point to the one origin. The beginnings of pyorrhea are not marked by any violent uncontrollable attacks, but are rather the gradual growth of the progressive enmity of a lurking foe. Thus it is that gradual gum exudations, undisturbed oral concretions, and the gathering of food particles commingle and unite at gum margins in a work of irritation, which is in every case the first cause of pyorrhea.

Oral prophylaxis as here advocated is the one rational preventative, as it is the one remedy for the developed disease in all stages and under all conditions. When wasting of alveolus and gum tissue has not progressed to uncontrollable loosening of the teeth, frequent and persistent prophylactic treatment, supplemented by the use of germicides and mild antacid protective remedies, warrants in every case a favorable prognosis.

A TERMINOLOGY SQUIB.

BY WM. A. MILLS, D.D.S., BALTIMORE. READ BEFORE THE ASSOCIATION OF DENTAL SURGEONS, BALTIMORE, JAN. 16, 1902.

To accurately impart information or ideas only definite or significant words should be used, otherwise they are misnomers. Members of none of the learned professions are oftener guilty of violating this rule than those of the medical and dental sciences. The writer is not excepted. The following words are but a few of

the many which are often misapplied and misinterpreted, some of which lack clearness of meaning: Life, pathologic, pathogenic, marasmus, alterative, sterile and its branches, aseptic, asepsis, antiseptis, irrigate and its branches, media, mechanical and environment. In some cases words are coined and have no authority for their creation or use.

Analysis is here given of a few which are commonly misapplied by the dental practitioner. Words from the root sterile mean—a condition of being infertile, or the rendering incapable of all putrefactive matter. Aseptic and asepsis mean—a condition of nonputrefaction; absence of all septic matter or pathogenic microorganisms. Can such conditional terms as these be verified when applied to treatment of the oral cavity? No. Instruments, liquids, etc., can be truly said to be sterilized, aseptic, or in a state of asepsis, when they have been processed by fire or with a high degree of heat—a temperature so intense that all living organized tissue or protoplasm brought in contact with it would die. As such absolute conditions are impossible in treating any part of the human body, these appellations are not apropos. The words which should be used are those having their origin in disinfect, which means—to cleanse from infection; to purify from contagion; also antiseptic, which means—opposed to or counteracting fermentation or putrefaction.

Words having their beginning in irrigate, which means—to lead water to, have their correct signification only when it has reference to water alone and not to medical mixtures. The exact word to apply in such cases is medicated, which means—to tincture or impregnate with healing substances.

Media is the plural of the Latin noun, medium, and means—the middle, middling, ordinary, etc. The medical definition at the present time is—the soil upon which anything grows, especially a substance used for cultivating bacteria, culture or nutritive medium. Why this word is used instead of the Latin noun, pabulum, is not stated. Pabulum means—to pasture, to feed; the means of nutriment to animals or plants.

The word mechanical is almost universally used when referring to devices or appurtenances used in prosthesis. Mechanical means—done by a machine, or without conscious mental exertion of will. This is not an appropriate word, but prosthetic is, which means—

to make or apply an artificial part to supply a defect of any part of the body, or any device used in treating diseased or abnormal conditions.

Why is it that so many philologic blunders are made? Is it due to ignorance? No, not in all cases, but more to a spirit of careless and heedless indifference as to the proper application of words, the lack of definite ones, and the hereditary habit of clinging to antiquated terms which in many cases have outlived their usefulness. The classic Greek and Latin words with their prefixes, suffixes or terminals are the most precise for giving full descriptions in their respective languages; but when made to do service in English, by prefixing, wedging in or terminating with French, or a conglomeration of syllables from still more foreign tongues, seem very incongruous and grotesque when analyzed. For example, take the word *environ* or *environment*, which is to-day so glibly used by all conditions of men that it has almost become a slang phrase.

Dr. Kirk says, "The tendency to generalize, to express conditions by formula, to seek out the natural law expressive of the relations of phenomena, seems to be a necessary quality of the human mind, yet one which frequently gives rise to error and difficulty. Certain forms of expression serve to obscure the idea they are intended to convey, and because of their inherent lack of clearness tend to perpetuate errors of meaning." This shows there is a lack of true descriptive terms, to give full and perfect expression to the many advances made in the science of medicine and its collateral branches, hence the necessity for more progressiveness in medical and dental appellations.

Dr. Bond says, "Medical terms and definitions, including dental, are not to be regarded as accurately stating the nature of things but simply as descriptions which may serve for practical purposes." Such a statement may have been acceptable to those living in the past, but to-day is the time of *positiveness*, and the use of abstruse terms is not satisfactory to the philosophical mind. A word to the wise is sufficient.

EXTRACTS FROM AN OLD JOURNAL.

BY MCFERRAN CROW, D D.S., VERSAILLES, KY. READ BEFORE THE KENTUCKY STATE DENTAL ASSOCIATION, MAY 14-16, 1901.

In looking through the library of my friend, Dr. Wm. Wasson, I found an old volume of the *Dental Register*, published in 1861.

Among other things of interest it contained some correspondence relating to the early history of dentistry that I thought would be worth reproducing. I have copied the letters verbatim as follows:
Dr. Taft, NEW YORK, November 3, 1860.

DEAR SIR:—In a letter received from you under date of Oct. 27, you request me to inform you of the first use of plaster of Paris models for the forming of plates to the same to receive artificial teeth, as far as I am informed.

My grandfather, Isaac Greenwood of Boston, Mass., practiced the making of artificial teeth there many years previous to the Revolution, but from what I can gain as to information, he never used plaster of Paris to make models of for either plate or bone work; he made his teeth out of the sea-horse tooth (hippopotamus), and used merely a bees-wax mold, as did my father, John Greenwood, who practiced in New York from 1790 to 1820.

He was the particular dentist of General George Washington, as expressed in a letter from him to my father, dated Mount Vernon, 6th Jan. 1799: "If you should remove to Connecticut, I should be glad to be advised of it and to what place, as I shall always prefer your services to that of any other in the line of your present profession." There is a pair of false jaws with human teeth on *now* in the head of President Washington, "in the tomb at Mt. Vernon," made by my father, John Greenwood, in 1799, and they are made with the bone gums—I think of the *elephant's tooth* "ivory," and made from molds of beeswax.

My brother, Mr. Clark Greenwood, deceased, and myself did not use plaster of Paris until about 1820, and I think it was through my own suggestion. "We hardened them by dipping the plaster molds in boiled linseed oil, and let them dry." Before that time white and yellow bees-wax was much in use for plate and bone work, even for half and whole sets of teeth. I never had a set returned to me on account of the fit. And I think I was the first in New York who set natural human teeth on bone gums and colored the gums to life, after those made for Gen. George Washington in 1799. I was the first, about the year 1823, to use the *steel* bur in a lathe which I invented, and had made for me in New York by a Mr. Morgan, a Scotchman, for excavating the cavity for the gums to rest in, in parts of and whole sets of teeth. And I claim the first use and discovery of wooden pivots, to be used in bone or mineral

teeth. And the first mineral teeth seen by me were brought to the country by Colonel Aaron Burr, whose dentist my father was, and presented to him by the Colonel. * * * In the first years of my practice metallic pivots to teeth were used, and screwed into the material of bone or human teeth (or sea-horse, sheep or oxen) and cotton was wrapped around the metal pivots to keep them in the sockets of the roots, which, when decomposed, would give an offensive odor; and with me it was a great point to endeavor to find a remedy to prevent these bad effects, and to keep the teeth sweet and clean as possible, which I soon was able to remedy, thus: About 1825 I was operating to fasten a single tooth for an English gentleman, the root of which had been "bushed" with bass or soft maple, to enable the pivot of gold to retain its place firmly, for which, after being well fitted to the cavity of the root, the wooden plug had been perforated that the gold pivot might rest in it firmly. Finding that the wood answered the purpose well, and that very little odor or smell arose from the wooden plug, the idea suggested itself to me that wood might be a proper medium to use for pivots to teeth instead of metal, and if I could procure a wood that would answer my purpose, I should have gained the point desired. After considering, I concluded to use hickory wood, well seasoned and dried, and straight grained white part, and I had the good fortune to procure some straight grained white, which had been used by a baker in the making of bread, some ten years in use. * * *

My father was the first to use the "foot-drill," and he made it himself from an old spinning-wheel of my grandmother's; and since his death I myself have used it, the same one, altogether in my practice for twenty years, and have it yet. I never had seen one before and I know the hand-bow-drill was always used before. I never used the hand-bow-drill to perforate the roots of teeth for pivots, etc., nor in any way, but a drill instrument with a spear-shaped point, gauged for the depth of the pivot, to drill the roots to receive the wooden or metallic pivot. But to make the hole to receive the pivot in the tooth, I always use the foot-drill, and in drilling pieces of bone or ivory I could, with the drill made of the finest needles, meet the drill hole an inch apart. The hole for pivot of wood in the false tooth and for the hole in the root should fit exact with the hole in the draw plate you drive the pivot of wood through. I was the first dentist to have mineral teeth prepared

with holes in them to receive wooden pivots. Hoping this may be of use to you, I am, dear sir, Yours respectfully,

ISAAC JOHN GREENWOOD, D.D.S.

Dr. J. Taft,

NEW YORK, NOV. 14, 1860.

DEAR SIR:—In your letter to me of the 9th of November you request me to give you some information of the early history of dentistry in the United States; and how far my relations were concerned before myself in the profession; and in what manner they gained their information relative to the science? From what I have been enabled to gather from my father and relatives, all I can inform you of is, that my grandfather, Isaac Greenwood, who was born and lived at Boston, and was the first practitioner of dentistry in the family, was the remaining son of Isaac Greenwood of Boston, professor of Natural Philosophy and Mathematics in Harvard College. He was about the year 1750 a mathematical instrument maker, and ivory and wood turner, umbrella manufacturer and dentist. He followed all these professions at the same time, and made the first electrical machine for Benjamin Franklin; my uncle Isaac told me so, and he was apprentice with his father and eldest son. Where my grandfather procured his information in dentistry it is impossible for me to say, and I presume his practice was confined to the mechanical portion; although in his portrait (large as life), taken some time after this, he is depicted with his left hand and arm resting on an open volume of Hunter's Treatise upon the Human Teeth, which portrait and treatise I have in my possession. The specimens of the teeth then made by him are very rude, imperfect and ill-shaped, merely a piece of sea-horse tooth formed to suit the space to be filled up, where the natural teeth were wanting, and a separation or slit made with a file (the enamel of the piece of sea-horse being ground white), with no manner of attempt at formation or imitation of natural teeth. They were not, in some instances, arched on the top, and were fastened with thread or wire, silver or gold. * * * Two years before the practice of my father in New York the following advertisement occurs in *Rivington's Royal Gazette* of New York, for August 24, 28 and 31, 1782: "Teeth—Any person who is willing to dispose of his front teeth, may hear of a buyer by applying to No. 28 Maiden Lane, for which a generous price will be given. N. B. Four guineas will be given for each tooth." The above teeth were, no doubt, required to be replanted into the cavities of

the alveolar process, to take root there and supply the loss of the ones to be eradicated for the operation. I have in my possession a skull with an under jaw, left side bicuspid, which has been inserted or engrafted in this way and taken root, or attached itself to the process. This skull was brought from Paris by my father, John Greenwood, about 1806, where he went to procure a keg of natural human teeth.

That dentistry was practiced prior to the Revolution in the Provinces of America, we learn from the following—*The Constitutional Gazette* of April 24, 1776, Boston, after stating that the body of Gen. Joseph Warren had been reinterred at Boston on the 8th, states: "The General's remains were found on the fourth instant, about three feet under ground, on Bunker Hill. They were known by two artificial teeth, fastened by gold wire," etc. If the above information can be pleasing to you, or as information to any one in the profession, you can take what you please of it, as you may depend upon anything which I write you upon the subject, as far as I am informed. With respect, I am, dear sir, yours, etc.

ISAAC J. GREENWOOD,

No. 142 West 14th street, City of New York.

I hope these extracts will interest some of you. Personally I enjoy reading anything pertaining to the early history of the profession. Dr. Wasson also has in his possession a tooth supposed to be of the extinct mammoth, which was picked up near New Madrid, Mo., in the locality of the sunken lands, caused by the earthquake in 1811. The tooth is a molar with five cusps, four double and one single. It is petrified and weighs between six and seven pounds. The crown measures eight inches antero-posteriorly, and the largest root is about ten inches from crown surface to end of root. It has three roots, a large, medium, and small, the latter broken off. The width of the crown is four inches.

PUTRESCENT PULP ALMOST FATAL.

By W. T. MCKENNEY, D.D.S., Beaver Dam. READ BEFORE THE KENTUCKY STATE DENTAL ASSOCIATION, MAY 14-16, 1901.

The patient was Mrs. T., wife of Dr. T., a prominent physician. She was thirty-nine years old, mother of four children (the youngest four years old), robust in appearance, but rather inclined to the nervous temperament, and previous to present illness had enjoyed

good health. She was suddenly seized with a severe pain in back of head and neck. Her husband adopted the usual line of treatment, but the pain continued to grow worse from day to day and was greatly intensified by patient assuming erect position. Dr. T. became alarmed and called Dr. N. and other physicians in consultation, who also were at a loss to know the cause of the pain and why it did not yield to treatment. This state of affairs continued for nine weeks, during which time there was no temperature, no periodicity, chilly sensation, nor sweating, which was conclusive evidence that the trouble was not due to malarial toxemia; neither were there any signs of paralysis nor loss of sensation, either localized or general; pupils of the eyes were normal and responded to the light readily; the secretions were normal in quantity and regular, so by exclusion meningitis, pachymeningitis and spinal troubles could be eliminated.

In the course of his wife's illness Dr. T. had nine physicians to see her, and all were puzzled for a diagnosis. At this time I was called to see a patient at the house of Dr. T.'s father, and there heard the history of the case. I remarked that the teeth should be examined for the cause, and was at once asked to call. I did so, and the nurse informed me that Dr. T. was absent from home, but she invited me to see the patient, which I declined to do. Next day Dr. T. wrote Dr. M. that his wife had spent the worst night since her illness, and hearing of what I had said, he requested Dr. M. to bring me with him. We went and I found the patient very nervous and suffering intensely, pulse feeble, much emaciated and very weak. I examined her teeth and found the right inferior second molar had a large cement filling on the posterior approximal surface, and was very tender on pressure. On further examination found tenderness at the posterior dental foramen. The patient told me she had been troubled greatly with the tooth when first filled and again when she was first taken with present illness. I felt justified in extracting the tooth and so informed the physicians, who told me to go ahead, but the patient was very weak and could not have her head raised above the level of the body without being crazed with pain. I feared nervous shock, but as it seemed a matter of only a few days before the patient would succumb unless relief should be afforded, I prepared to operate. With great care and difficulty I placed my arm under her neck until I could grasp her

chin with my left hand, and then cautiously extracted the tooth. As I anticipated, the shock was great, but she rallied soon and said, "I am better now." I found a putrescent pulp. From the moment the tooth was extracted she began to improve, and made a complete, rapid and uneventful recovery.

The physicians in charge did not like to give a dental surgeon all the glory of her recovery, so as time developed the fact that the menopause had taken place, or at least that the menstrual flow had occurred only two or three times after her recovery, their theory was that her illness was all due to change of life and not to the offending tooth. With my limited knowledge of the physiological disturbances that may arise from the menopause I am inclined to the opinion that the suppression of the menses at this early age was probably the result of the severe and prolonged nervous shock caused by the tooth. Dr. T. also informed me that her urine was heavily loaded with uric acid during the greater part of her illness—a symptom I always find when a patient is suffering with neuralgia traceable to the teeth and of long duration.

I will quote from a paper by Dr. W. H. Whitslar on Dental Neurology: "The fifth cranial nerve, called sometimes the trigeminus, resembles a spinal nerve, it being compound in its functions, arising from two roots with a ganglion upon its posterior root. This nerve and all its dependencies are therefore subject to its excitement or depression by vaso-motor or trophic changes, as well as the so-called sympathetic relation with other nerves." It is thus easy to perceive that other organs than those contained in the mouth are subject to the derangement due to dental origin. This would include most frequently the eyes and the ears. Afflictions of the larynx, alimentary canal, heart, and even uterus arise because of dental irritation. Authentic cases of hip disease related to dental diseases are on record.

A PLEA FROM A PROFESSIONAL STANDPOINT FOR INVENTIVE INGENUITY.

BY C. W. McGUIAR, D.D.S., MUNFORDVILLE, KY. READ BEFORE THE
KENTUCKY STATE DENTAL ASSOCIATION, MAY 14-16, 1901.

In selecting this theme I have two objects in view. One is a desire to depart from the list of stereotyped subjects common to dental societies in general, and to briefly divert attention to one

which has been no small factor in advancing dentistry to the enviable position it occupies among the recognized professions. The other is to bring out discussion upon this topic, with a view to ascertaining why there is so large a number of dentists, usually of high-toned, intellectual proclivities, and frequently of long experience in practice, who manifest a deep-rooted and unnatural antipathy toward an instrument or appliance, no matter how meritorious it may be, if it be patented, or in other words, if the inventor has been legally granted an exclusive title to the product of his own ingenuity.

It would hardly be fair to attribute this opposition to prejudice, for certainly there can be no grounds for such in view of the benefits already accrued from the use of patented inventions relating to dentistry. Neither can it be attributed to selfishness, for we all know that professions do not harbor this demon. Finally, it can hardly be due to the slight increase in the price of patented inventions, which is usually within reason, considering the expense necessary to keep them up to a standard of accuracy and uniformity. From a dozen or more flimsy and weakly supported reasons I am able to find but one which has any apparent justification, and this is embraced in a sentiment borrowed from the professions of medicine and surgery, from which is evolved the idea—"That in order that dentistry may not be hampered by any restrictions in the treatment of those organs which come under its care, it becomes the duty of a dentist to give to his profession that which he may originate or invent." If not exact, this is at least the essence of this stray notion.

Here I deem it proper to state that my allusions to inventions imply specifically those instruments, machines, tools and similar appliances indispensable to the dentist, for I believe that our profession almost as a unit is opposed to patented methods and processes, and justly so. But in our antagonism we must not confound method with the means or aids whereby methods and processes are carried out, lest in our condemnation we accomplish that which will hamper advancement. If you are not in the habit of drawing this distinction, it is time to do it and to discard your invariable rule, because you can't adhere to it and keep up in the pace that is being set.

The sentiment as outlined above being, so far as I am informed, the only basis around which the followers of this tenet can rally, I will endeavor to point out the weakness of their position, and then to defend the cause of inventive ingenuity, which, instinctively

timid and retiring, is often unappreciated. In the first place, the borrowed part of this sentiment is inapplicable to dental inventions, the whole merely appealing to feeling and not to reason. Assuming an invention to possess decided advantages in obtaining desired results in a given case, I would ask the question, "When is the dentist most hampered in handling the case, before or after the creation of the invention?" Before its creation he had no alternative but a resort to means more or less tedious and uncertain. After its introduction the only thing which hampers him is "the price" with which to procure the improvement.

If it can be successfully argued and proven that dentistry has been hampered in its service to the public by desirable and useful patented inventions, then I must admit that those of the opposition have one good reason for their position, but I cannot admit it if they simply arch their brows and exclaim, "Oh! but the medical and surgical professions don't indorse it." Away with such subserviency! With due respect for their traditional, dignified views, why need we borrow precept from them? When we mend a broken instrument or forge a new one we do not courtesy to the blacksmith. When the medico steps over the line, with a legal license in one hand and a pair of one dollar universal forceps in the other, and extracts or breaks off a tooth, he does not apologize to the dentist or the surgeon. Then because we employ a few medicaments or draw a little blood in the treatment of those organs which should properly come under our sole care, who says that we should render acknowledgements to the physician or surgeon?

In the second place, admitting for the sake of argument that the sentiment is applicable to the class of dental patents to which I refer, and that we are specialists of medicine with inseparable views upon this subject, let us see why the parent profession is opposed to patents affecting it. Originally reference to the professions implied specifically the law, theology and medicine. They were called the three learned professions and for many generations were esteemed and respected as such. These three, honored and dignified by master minds through centuries, wrought unto themselves ideals and customs which were hard to break down, as evidenced by the fact that it required a revolution to determine that a people had a right to govern themselves; the persecution and torturing to death of thousands of the steadfast and faithful to establish a Protestant

religion—and there are to-day many men in the medical profession who do not accept the accumulated evidence that certain diseases are due to the presence and morbid influence of living organisms.

Congenial association disseminates habits, and habits form semblant character. Thus it appears that when the patent law became operative, and it was evident that medicine would be more or less affected, the primary attitude of the profession toward the system may have resulted as a protest against such a measure as being fruitful of radical departures from trodden paths. I say this may have been the primary reason, but we know that medicine really has another just and sufficient cause for its opposition. I refer to the hundreds of patented compounds, nostrums and cure-alls which, by being legalized, have wantonly and unscrupulously invaded the field of professional medical practice, and are a thorn in the flesh, constantly irritating and aggravating to the members of a worthy and honorable calling. Of a truth, medicine has been hampered from this source by patents, but I am informed that relief is in sight and that it is now very difficult to obtain patents for medical compounds, since the Patent Office holds that they do not involve invention, being no more than prescriptions that a physician might write.

With reference to surgery, it is but fair to note that it is of late years emerging from the ban of the antipatent influence, because it is fast learning that there is more hampering without than with the aid of patented instruments.

Being unable to find any further use for the borrowed part of the sentiment, I would suggest that we gracefully acknowledge the loan and return it to the medical profession for safe keeping.

Thus we come to that part of the expression which has been ingeniously molded to a nice adjustment—the charitable feature! For downright audacity, pure and simple, it takes all the prizes. I must repeat it—"In order that dentistry may not be hampered by any restrictions in the treatment of those organs which come under its care, *it becomes the duty of a dentist to give to his profession that which he may originate or invent!*" Does not that capture a whole conservatory of flowers? Have I garbled the quotation? I am unable to find the sum of it in print, for none seems willing to subscribe to it, but I give it in substance, if not verbatim, as often heard from reputable dentists of my acquaintance. It would really denote more sincerity on the part of the disciples of this belief and

be more becoming to them, to simply refuse to patronize or tolerate patented inventions.

Is it a dentist's duty to give to his profession that which he has created, originated or invented? If he did such a thing, what would be the incentive for devoting his time and money to the development of his idea, when it might be more profitably devoted to his practice or other matters? Does the dental profession solicit alms from this source, and if the source is fruitful in response, will the dentists be equally generous with the profits accruing therefrom and see to it that the wolf is kept from the door, that the coals burn brightly in the grate, and that approaching old age hath no terrors for the kindhearted one who gave his time, the fruits of his ingenuity, and his life to them; and will they finally erect a shaft, above the simple mound and inscribe thereon—To the memory of

—— ———, DENTIST, GENIUS, PHILANTHROPIST?

I believe it is estimated that but one in every seven in the human family is a producer, and if this be true the other six are pensioners upon the sweat of one brow. It is safe to say that not more than one in every thousand is endowed with the genius of original conception and there are fewer still who have also the talent of execution to the extent that they can put to practical use that which they have conceived. If this be true, it naturally follows that the overwhelming majority of mankind is indebted to a few men for the lightening of many burdens, the dissipation of many cares, and the enjoyment of many luxuries which are directly the fruits of inventive ingenuity.

I said indebted, but the debt has been paid by the enactment of a measure which provides legal protection for that small minority who think while others sleep, who conceive while others dissuade, and who accomplish what others have not. It is known that we are an energetic, alert and progressive people; that we can seize an opportunity and turn it to advantage, and that with sufficient incentive we can reduce to practical utility elements unharnessed and problems unsolved, and it was to develop this natural capacity that the patriotic body of American law makers, having faith in our ability, gave us the existing Patent Law, which rewards inventive ingenuity by guaranteeing to it for a term of years the exclusive right to its own product. It was an honorable means to the accomplishment of an honorable end, and who will undertake to say that

the result has not justified the act. It seems to have inspired investigation all along the line by holding out hope of reward.

Without undertaking to enumerate what has been accomplished within the last half or even quarter century in professional realms by scientific research resulting in proved and refuted theories, applied principles and practical developments, it is but stating a truth to say that the strides have been marked and rapid. Nor is it less true with regard to the humbler callings, the trades, and in the manufacturing and commercial world, for they are quite abreast of the tide. Out from the crest of this gigantic wave reaches the hand of genius, clearing the way and beckoning eagerly, that thrift and prosperity may follow.

Hope of reward has inspired many minds to activity, and demanded more thorough preparation in technical channels. Education has set its foot at the throat of superstition and ignorance is no longer excusable by poverty. Science has shed light into darkness, and doubt has been well-nigh routed by demonstration. Crude methods, processes, machinery and appliances have been simplified and perfected by the hand of invention. Though there is nothing new under the sun, the old takes on a new garb and glistens with a new light. In it all shines the soul of genius, without which were no achievements, no results, no knowledge. Ingenuity is an offspring of genius.

Annals teach us that for long years dentistry groped in mist and was plied by whoever chose, but about the middle of the last century willing hands seized the helm, brought order out of chaos, sailed into port, dropped anchor alongside the older professions, and flung her pennant to the breeze. To-day she is being saluted from all quarters, which condition is due to no one thing so much as to her mechanical equipment, supplied through the agency of inventive ingenuity. With this equipment she is able to take the rostrum and declare that by and with these things she obtains results, the isms and scisms of theorists to the contrary notwithstanding.

In time of war our government rewards its soldiers and sailors for deeds of valor by speedy promotion and medals of honor, and in an emergency no nation can rally its forces more quickly than we, but the reward of promotion and medals alone does not suffice, for annual appropriations must be made to furnish pecuniary reward for its host of fighters.

Reward in the form of praise, applause or honorable mention is not sufficient for the necessities of everyday living, but must needs be of a substantial nature, else only those born with a silver scythe may hope to reap. Reward, I say, bestowed in this manner will not suffice to secure the best practical results of inventive ingenuity, for other pastures are broad and verdant and offer both wealth and fame.

For all those professional duties required of us day by day and year after year, suppose our reward to be but a measure of fame as expressed in the thanks and esteem of a grateful clientele—would not the ranks soon be deserted? Would you have it understood that you require no fee, but that you desire only approval, appreciation and praise?

I have read somewhere that every decade brings shorter hours to those who merely work, but for those who would succeed there is no time-table. Do not for a moment think that it did not require study, toil, patience, skill, perseverance, faith, hope and charity—all of these and even money to develop and reduce to practical utility many of the convenient instruments and appliances which are so indispensable in our work, making it possible to display whatever artistic skill we may possess. It is not in behalf of every little worthless invention, the creation of a curious whim, that I appeal, for the stamp of disfavor soon brands such, but for those that are a success, and that indicate the detail of a master hand. Without the incentive of intrinsic reward it is doubtful if any of them would ever have materialized, for they were patented, most of them by practising dentists who thought to lighten the work of their fellows and at the same time lay by something for future needs.

At this, the beginning of a new and portentous cycle, man hardly dares predict its possibilities. I believe that in the future as in the past dentistry will in a large measure owe her advancement and progress to inventive ingenuity, and as a liberal and ambitious profession she cannot afford to stifle and ignore such a fruitful source.

Discussion. *Dr. J. W. Wallace*, Louisville: I entirely agree with the essayist, and believe we should give our aid and encouragement to those who have inventive ability. These things should not be considered alone for us and the present, but also for the future and for those who come after us. In years past the profes-

sion has been hindered by false ideas on this subject, but as time advances more liberal and generous views are held along this line.

Dr. N. T. Yager, Louisville: This paper possesses peculiar interest for me, as I was once placed in a position where I did not know what to do, having invented something, and not knowing whether I should give it to the profession outright or try to benefit by my work. I believe that if we can present something to the profession which will lighten their labors, and at the same time can benefit ourselves, it is the proper course to take.

Dr. Henry Pirtle, Louisville: The essayist is quite correct. Some years ago a member of this Association invented an appliance to aid in the treatment of pulpless teeth, and gave it to the profession. The dentists, however, did not appreciate it, so he had it patented, and it is now used all over the United States. I believe all inventors should be remunerated, and I further believe that all useful appliances should be patented.

Dr. E. T. Barr, Bowling Green: Many of our useful inventions come from young men, often of limited means, and instead of discouraging them by saying that it is unprofessional for them to patent and benefit by their inventions, we should encourage them to take this very step.

Dr. H. B. Tileston, Louisville: There is no room for argument. If useful appliances were not patented they would never get into our hands in proper shape. The man who invents a thing is the one to receive the reward.

NEW APPLIANCES AND METHODS.

BY DR. F. H. LEE, D.D.S., AUBURN, N. Y. READ BEFORE THE ROCHESTER DENTAL SOCIETY, JUNE 11, 1901.

The year passed has been as prolific as its predecessors in additions to our appliances, methods and remedies. These are too numerous to describe in detail, so I will mention only the more prominent ones and some which I have tried. Who of us has not had his patience and skill tried in endeavoring to subdue severe pain following the extraction of a tooth, in what is termed by some "dry socket?" These cases are usually the result of extracting a tooth which has been sore, with inflamed surrounding membrane. I have had great success in treating such with orthoform. One application generally keeps the pain under control for several hours, and

another can then be used. It also gives good results in acute pulpitis, and is antiseptic in action, causing the wound to heal promptly.

For hemorrhage after extraction, or for bleeding gums after grinding roots in fitting bands, the suprarenal extract is the best styptic, clean in use and prompt in action. When an anesthetic is needed at the same time, wiping the gum around the tooth or root with suprarenal added to chloretone, a preparation made by Parke, Davis & Co., is equally efficacious.

For hypodermic injection in painless extraction a five per cent solution of nirvanin is very effective, prompt in action and non-toxic in effect. A number of new methods and remedies have been recommended for root canal treatment, but I think nothing can take the place of the Callahan method, followed by any favorite filling.

A unique operation has been done by Dr. M. L. Rhein of New York, which consists in amputating the palatine root of the superior molars, when these teeth are loose, and substituting a fac simile in porcelain which is cemented to the body of the tooth. Dr. Rhein claims that the usefulness of the tooth is prolonged by steadying it in the socket. This certainly is a beautiful operation, and will greatly benefit the tooth, but I fear it will not become universal, owing to the exactness of skill and technique required.

The use of dry powder of peroxid of sodium, recommended in septic pulp canals by Dr. Charles Peters of Syracuse, overcomes the objection to using the solution, which is very difficult to make. After adjusting the dam or napkin, a dry broach is dipped in the powder and worked into the canal. This is repeated until you are satisfied that the root is sterilized, and then the contents of canal are saturated with a five per cent solution of sulphuric acid, the effervescence of which forces out all debris.

"To restore a badly decayed root to usefulness for a crown, Johnson & Lund furnish a drill, tap and small German silver tube threaded on one end. After all decay has been removed, the root is drilled and tapped, the little tube screwed in place, and amalgam packed around it. A pin is then inserted in the tube and the crown attached, giving good results in these troublesome cases.

Verily, we must be on the verge of the millenium, for not satisfied with implantation of teeth in the jaws of his patients, Dr.

Payne of New York goes one better, and after drilling a well, as he calls it, in the alveolus, he inserts a silver tube with a cap on it. In about two weeks, when nature has healed the wound, he inserts a continuous gum tooth with cement. A gentleman from California performs the same operation, but uses a gold tube instead of a silver one. With a wheel bur he cuts a groove around the bottom of the well, inserts the tube, fills it with non-vulcanizable rubber, and with a plugger forces it in tightly, which causes the gold at the bottom to fill in the groove, thus fastening it firmly in place.

Several new detachable crowns have been advertised in the journals, but the ideal has yet to come—one that will be universal in adaptation and easily replaced.

Porcelain inlay work seems to be advancing and improving, and will soon be used extensively. It will of course find no place in the cheap parlors, unless it be used as a bait to draw the multitude, after which some substitute can be palmed off.

The danger of contaminating gold for fillings by exposing it to the naked flame is overcome by several annealers, some heated by electricity and some by alcohol. All are effectual, but the latter are the cheaper, and the claims are just as broad.

TO RELEASE PLASTER IMPRESSIONS.

BY D. L. ABER, D.D.S., PITTSBURG.

How often after we have taken plaster impressions do the patients complain that they thought we would pull the whole top of their heads off in getting the plaster out of the mouth—that it was worse than having the teeth drawn, etc. The impression adheres to the mouth because the plaster while setting absorbs the moisture from the tissues. The remedy for this trouble is as follows—When taking an impression let the plaster set quite hard, say from three to five minutes. Then hold up the lip and place the nozzle of your water syringe between the muscular tissue and the edge of impression, and gently force a little water between, repeating the operation all around the impression. In nine out of ten cases it will drop down without any pulling or even touching with the hand. This method may not be new, but I have used it for some time with great satisfaction to patients as well as to myself, and some dentists may be benefitted by the suggestion.

Digests.

ERYSIPELAS FOLLOWING EXTRACTION. Dentists do not see the patients who die in hospitals of septic pneumonia; the death certificate says "pneumonia," and no more is known. But those of us who trace it from the original history find many a case that goes on to desperate conditions because of the removal of a tooth, because the bacteria at its root were in a state of active proliferation. In most cases where abscess is progressing at the end of a root, I believe the fluid collection of pus becomes sterile in a few days, because the bacteria, walled in by phagocytes, pour out so much toxin that they commit suicide with it, and then it is safe to do anything with the tooth. But while the bacteria are progressing and developing rapidly we must know that these cases are dangerous ones; we must handle them with the greatest caution. Yet I have seen many a case coming in with violent inflammation. I saw a patient about two weeks ago with violent streptococcus infection coming from the extraction of a tooth. My impression is the patient died shortly afterward. It was sent to the hospital as a case of erysipelas. The patient was almost moribund. It would have gone down in the death statistics of this city as erysipelas. Nothing more would have been heard of it if I had not been sufficiently interested in the matter of oral surgery to ask if she had had anything done to her teeth, and learned that she had had an ulcerated tooth removed, and this erysipelas followed. Dentists would have known nothing about it, and physicians would have known nothing about it excepting that it was a case of erysipelas. When we are all graduated from the same college, when we all work from a common basis of principles, then we shall have better records of such case-histories.—Dr. T. R. Morris, *Cosmos*.

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HOLLOW SADDLE BRIDGE OR DUMMY. By D. S. Oman, D.D.S. I have often heard it said that it is impossible to make a hollow saddle bridge or dummy without leaving an air vent to allow for expansion of air. I will try to explain how this can be done. First get a metal die of the ridge where the saddle is to rest; proceed in the ordinary way, using platinum for the saddle or next to the gum. Stiffen it with 22 karat solder. Stiffen the occlusal sur-

face or cusps with 22 karat solder and long scraps of gold. This is to keep the solder from leaving the cusps. Stiffen the buccal surface the same way. Swage the lingual side, using number 32 or 34 gauge, 22 karat, leaving it a little longer mesio-distally. Wire in place and solder from the inside with 18 karat solder, being careful not to let the solder leave the joints. *Do not stiffen the lingual side.* Close the mesial end first by sawing a notch in the buccal side and fitting a piece of 30 gauge as close as possible, turn over the protruding end of the lingual side, thus holding the end piece in place, drop in sufficient 18 karat solder and a little borax. Solder over a Bunsen flame. The next step will be to close the distal end; it is done the same way as the mesial. Before fastening on the end piece, put in 18 karat solder and a little borax; after it is closed, wire it, to be sure that it will not move. Now hold over Bunsen flame and see that solder comes through the joints; you will notice at this point that the lingual side is convexed; this is caused by the expansion of air. As soon as it is cold you will find the lingual side is concave; this is caused by the vacuum formed. If this does not take place, you will find there is a leak. The lingual side can be contoured by investing the piece in fire-proof material and flowing solder over it.—*Headlight, Jan., 1902.*

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COHESION OF GOLD. By C. A. Hawley, D.D.S., Columbus, O. Read before the Ohio State Dental Society, Dec., 1901. The practice of good operators has varied much in regard to the character of instruments used for packing cohesive gold. Some have advocated a sharply serrated plugger, some those with fine serrations, and others instruments with no serrations whatever but with the condensing surface smoothly polished. The experiments made by Dr. Black a few years ago plainly show that ordinary gold fillings in the bicuspid and molars will not withstand as great a crushing force as they are likely to receive in the mouth. Clinical observation shows the same thing, though some of the failure is undoubtedly due to improper preparation in the cavity. In the anterior teeth, even if the strength were not necessary, we should have as perfect cohesion as possible to obtain a filling that will take a smooth, fine finish and retain a surface free from pits and scaling. In view of these facts, I have attempted by a series of experiments to obtain some definite knowledge of the value of different instruments for packing gold.

For this purpose I had made a steel cavity block similar to the one used by Dr. Black in his experiments on amalgam. In the first two series of fillings an attempt was also made to test the value of three different forms of gold: pellets, ropes and tape. In the first series twenty-four fillings were made. Three different pluggers were used, one sharply serrated, one with fine serrations and the third polished smooth. The points were rectangular, 1.32×1.64 of an inch, and of exactly the same size. The mallet was a Snow automatic, kept at the same force of blow for each, and the screw governing the stroke marked so that any slipping or accidental turning could be detected at once. The blow in this series was made rather light, as the fillings were small, and no particular attempt was made to get accurate adaptation to the cavity walls. The fillings were made in the square cavities $.085 \times .085$ of an inch.

Twenty-four lots of gold of two grains each were weighed out, twelve lots of No. $\frac{1}{2}$ cylinders and twelve of tape gold. The tape was made by folding No. 4 foil until it was sixteen leaves thick and cutting to a convenient width for the cavity. The same manufacturer's gold was used in all the experiments. It was all well annealed on a sheet of mica over a small Bunsen burner and the annealing made as uniform as possible. The fillings were started by covering the entire bottom of the cavity, using hand pressure, with the same point that was to be used throughout the filling. 208 blows were given each filling. In the fillings made with pellets I found that each lot had thirty or thirty-one pellets. Twenty-six were set aside for malleting, and the remaining four or five, as the case might be, used for starting. Eight blows were used on each pellet, making the 208 in all. The tape gold was cut into pieces about an inch long, and in using was folded back and forth with the plugger after the usual manner of manipulating this form of gold. The pieces were counted and the 208 blows distributed between them evenly. Eight fillings were made with each plugger, four with pellets and four with tape. The amount of gold had been so adjusted that the cavities would not be quite full, thus preventing any overlapping and consequent liability of destroying the serrations of the point of the hard tempered steel of the block. As soon as a filling was made it was removed, the uneven surface left by the plugger dressed smooth with a fine file and placed in a small pasteboard box, numbered and record made. It was assumed that the

cohesion obtained would show by the density or specific gravity. The specific gravity of cast or hammered gold has been determined at 19.4 and the difference between the specific gravity of the filling and 19.4 would show the amount of air space it contained.

The specific gravity of the fillings was determined by Prof. F. A. Fish of the Ohio State University. It was found that the usual method of determining specific gravity by weighing in distilled water was not available, as the difference in the amount of water displaced by the fillings was so small that it could not be calculated, so the method of finding the volume in cubic millimeters and dividing by the weight in milligrams was used. Each dimension was carefully taken with a micrometer, the filling weighed and the specific gravity thus calculated. The results are shown in the following table:

SERIES I.			
No.	Kind of Gold.	Kind of Plugger.	Specific Gravity.
1	Pellets	Sharp serrated	14.1
2	Pellets	Sharp serrated	13.4
3	Pellets	Sharp serrated	13.8
4	Pellets	Sharp serrated	13.9
5	Tape	Sharp serrated	14.5
6	Tape	Sharp serrated	14.0
7	Tape	Sharp serrated	13.7
8	Tape	Sharp serrated	14.2
9	Pellets	Fine serrated	14.3
10	Pellets	Fine serrated	14.4
11	Pellets	Fine serrated	15.2
12	Pellets	Fine serrated	15.3
13	Tape	Fine serrated	14.5
14	Tape	Fine serrated	14.3
15	Tape	Fine serrated	15.0
16	Tape	Fine serrated	14.8
17	Pellets	Smooth	15.4
18	Pellets	Smooth	14.8
19	Pellets	Smooth	15.6
20	Pellets	Smooth	15.6
21	Tape	Smooth	15.1
22	Tape	Smooth	16.1
23	Tape	Smooth	15.8
24	Tape	Smooth	14.8
Average, sharp serrated 13.9. Average, fine serrated 14.7. Average, smooth 15.4. Average, pellets 14.5. Average, tape 14.4.			

It will be seen that while the difference in the fillings is not large, their density increases steadily as the sharpness of the serrations

decreases and is greatest in those made with the smooth instrument. Note also that the specific gravity of the densest of those made with the sharp serrations is lower than the lowest of those made with the smooth plugger.

As for the test of pellets and tape, the difference is so small that advantage can scarcely be claimed for either. The fillings were so small, however, that one was rather at a disadvantage in using tape, as it was somewhat difficult to fold it back and forth smoothly.

In the next series of six fillings the same pluggers and the same methods were used, except that new slides for the block were made, having two round cavities 9-64 of an inch in diameter. One of the cavities, the one in which the fillings were made, was 11-64 of an inch deep, and the other, which was used only to hold them while the surface was dressed smooth, was 7-64 deep. Two fillings were made with each plugger, one with tape and the other with ropes of gold. The ropes were cut into pieces about an inch long and were made by rolling about one-fourth of a sheet of No. 4 foil. Eight grains of gold were used in each filling and 620 blows struck. The mallet was set to a little harder blow. The results are shown in the following table:

SERIES II.

No.	Kind of Gold.	Kind of Plugger.	Specific Gravity.
25	Tape	Sharp serrated	13.8
26	Ropes	Sharp serrated	15.9
27	Tape	Fine serrated	16.1
28	Ropes	Fine serrated	14.7
29	Tape	Smooth	16.8
30	Ropes	Smooth	16.0

Average, sharp serrated plugger 14.8. Average, fine serrated plugger 15.4.
Average, smooth 16.4. Average, ropes 15.55. Average, tape 15.56

The average of these fillings shows again the density of the fillings increasing as the serrations decrease. The test of the different kinds of gold is again negative, indicating that with the same manipulation the form in which the gold is used has nothing to do with the density of the filling.

Another series of six fillings was made in the same cavity slides. The test of the different forms of gold was abandoned and all were made of No. $\frac{3}{4}$ pellets. Seven grains of gold were used in each filling. 910 blows were struck each filling or fourteen to each pellet after the filling was started. As the points, 1-32x1-64 of an inch,

were rather small for the cavity, $9\frac{1}{64}$ of an inch in diameter, the points were changed and two of bayonet form, such as are in general use, were selected. One of them was ground smooth and polished. The faces of each were round and exactly $3\frac{1}{64}$ of an inch in diameter. The blow of the mallet was again slightly increased in force. As will be seen by the averages this series presents the most decided difference between the smooth and serrated pluggers. The result is shown below:

SERIES ·III.

No.	Kind of Gold.	Kind of Plugger.	Specific Gravity.
31	Pellets	Serrated	13.5
32	Pellets	Serrated	12.7
33	Pellets	Serrated	12.3
34	Pellets	Smooth	16.1
35	Pellets	Smooth	15.3
36	Pellets	Smooth	14.9

Average, serrated point 12.83. Average, smooth point 15.43.

It will be noticed in the first series of fillings that the density is not very high and not so uniform as might be expected. In the way of comment on this fact I might say that the mallet was not set to a very hard blow and it is not the instrument I would select to make a very dense or uniform filling. It was selected for these experiments because it is the only one in which the force of the blow can be made uniform. The density of the last series of fillings was especially disappointing. The blow was about as hard as could be used in the ordinary case on the teeth, and fourteen blows to the pellet ought to make pretty thorough condensation. It is possible that the more thorough malleting with the serrated plugger comminuted or broke up the gold instead of promoting cohesion, but this would not be the case with the smooth plugger. We must remember too that the size of the pluggers was about doubled.

These results as a whole point to the conclusion that serrations have no value so far as the cohesion of the gold is concerned. Cohesion is a molecular force acting at insensible distances between the molecules of a substance, and the more smoothly and closely the surfaces or particles are brought together the stronger the cohesion. Anything that comminutes the surface lessens the force. The use of serrations then, in a general way, is limited to the prevention of the instrument from slipping, especially in pluggers in which the condensing face works at an angle with the handle. They should in all cases be as fine as possible.

The fact that gold will weld in the cold state is due probably to its lack of oxidation and its softness, which makes it possible to drive its particles into such close adaptation that the two surfaces come within the range of molecular force. Lead and tin are soft and have cohesive properties when freshly cut, but a coating of oxid soon forms on contact with the air which interferes with the close adaptation necessary. Tin retains this property longer than lead.

There is one instance in which sharp serrations will assist in the union of two layers of gold. This is in the case of noncohesive gold or gold which has become slightly moist and refuses to stick. We have in each of these cases a coating on the surface which interferes with cohesion. Here the sharp serrations will drive through one layer into the other and bring the fresh cut and uncontaminated particles together. There is probably some mechanical union also. The workers of noncohesive gold found that deep sharp serrations effected a union of this kind between the layers of the noncohesive gold.

In the beginning of these experiments I thought that perhaps the density of the fillings could be shown by rolling them out very thin and examining the texture of the resulting plate. For the purpose of preliminary testing I made two fillings in the square cavities, one by hand pressure with a serrated plugger and the other with a smooth plugger and hand mallet. The first tested specific gravity 13.1, the second 17.3. Very little difference could be seen after rolling out. The pressure of the rolls seemed to make the condensation uniform.

In making the filling with a hand mallet my assistant was instructed to use about the same force of blow as in ordinary work in the mouth. A plugger 1-32x1-64 of an inch was selected, and I judge that the blow would be less painful on a tooth than the blows of the automatic used in series II. The great increase in the density of the filling indicates that there may be some principles worth considering in regard to mallets, though I regret that I have at this time no experiments to prove them.

In the first place, while it requires considerable force to condense gold well, we are constantly reminded that we are dealing with a living sensitive organ, and the amount of force that can be exerted upon it without pain is limited. So we must exert this force upon the gold with the least possible shock to the tooth.

As to the size of the point, while it must always be large enough to drive the gold before it and not penetrate, yet any increase in size beyond this point decreases its effectiveness, for, given a fixed blow, the penetrative force decreases as the area of the surface of the point increases. So the point should be kept as small as possible without penetrating the gold.

Now, what kind of a blow will have the greatest condensing effect? When two masses of matter come together the motion of one is imparted to the other in proportion to the momentum of each. The momentum is the product of the mass by the velocity. A ball struck by a bat has an amount of motion imparted to it in proportion to the weight and velocity of the bat. Given the same mass the energy of the blow or the work done is proportional to the square of the velocity. The penetration of a rifle ball is increased not as its velocity but as the square of the velocity. If the velocity of the ball is doubled the penetration is increased not twice but four times. Applying these simple principles of physics to the mallet in its work in condensing gold we should have a light mallet with a blow of high velocity. The mallet should be light, so as to impart to the tooth but little of its own motion, and the velocity should be high to increase as much as possible the work at the point of the plugger on penetration. That the work can thus be rendered great without imparting motion to the object struck we see in firing a pistol-ball through a pane of glass. If the velocity of the ball is very great a smooth hole will be cut without otherwise breaking the glass, but if the same ball be thrown from the hand the glass will be shattered.

The profession has recognized for years the superiority of the hand mallet for condensing gold. In this mallet we have the blow struck at the end of a long handle, a lever of the third class which gives great swiftness of motion. In most of the automatics that have come into general use we have a steel plunger for a mallet, actuated by a spring and moving up and down inside a metal tube. The friction of the plunger on the sides of the tube and the direct action from the spring prevent a sharp, quick blow. In looking over the sixty or more patents that have been granted for different forms of automatic mallets we find a constant effort to devise some appliance that will give a blow similar to that of the hand mallet. So far those that have succeeded have been too unwieldy to come into

general use and have been superseded by those in which neat appearance and convenience have overbalanced the faulty character of the blow. Of the several engine mallets which have been patented and placed on the market those have been most successful that lift the hammer freely from the plugger and return it with a sharp quick impact. Those that have been made upon the plan of the pushing force of a cam or a series of inclined planes have failed. The blow has not the necessary velocity. Elasticity in a mallet destroys, or reduces by so much as it is elastic, the force of the blow, by increasing the time of the impact. The reaction of the elastic substance reduces the energy by carrying the blow over a longer period of time and is thus a serious defect.

For hand use we must have a mallet of considerable weight because we cannot accurately deliver a blow with great velocity by hand. Steel is an excellent material for a mallet because of its hardness and inelasticity, but it must be used with great accuracy and skill that its smooth surface in contact with the polished end of the plugger does not give a glancing blow, which is of course undesirable. For this reason the lead filled mallet is often used, as its soft surface prevents any glancing and it is not elastic. Lead and tin in equal parts make a composition that is harder than lead, yet not so hard that a blow from it is likely to slip, and it is preferred by many operators.

The electric mallet, so far as the blow is concerned, is probably the best we have. The blow is of very high velocity and the hammer of steel has no elasticity, so we should have very little of its motion imparted to the tooth. Clinical use shows this to be true, for it is well known how gold can be built along frail walls with this mallet without fracturing them. Unfortunately its unwieldy form and high cost greatly limit its use.—*Summary, Jan., 1902.*

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SCIENCE AS A TEACHER OF PROPHYLAXIS. By Samuel A. Hopkins, M.D., D.D.S., Boston. Read before the New York Institute of Stomatology, Oct. 1, 1901. (Copyright, 1902.) I ask your indulgence while I review briefly a paper which I read before the Massachusetts Dental Society last June. The paper which I am about to read is a continuation of same, and as that one has not yet appeared in print, and as it is necessary to the understanding of this paper that you should have some idea of the other, I will give

as briefly as possible a rough outline of some of the statements it contained.

I called attention to the remarkable mechanical and manipulative skill which our profession has attained, and expressed the belief that operative treatment could go no farther. Without decrying the immense good to humanity that such skill had wrought, I hinted that, with such remarkable facility for replacing lost teeth, and repairing diseased ones at our command, both patient and dentist were taking chances with the natural organs that they would never dare take if no mechanical substitutes were known. If our work of restoration were less successful, our efforts to prevent the loss of teeth would be more vigorous and emphatic.

I suggested that, in carrying on a warfare against dental caries, we must begin with the child at a very early age. In our own minds we must place the highest possible value upon the natural teeth, free ourselves from all thought of mechanical substitutes, and fight the battle as if the loss of a tooth were irreparable.

I spoke of Miller's theory as a practical working basis upon which to build up a system of treatment for carious teeth, and I drew attention to the theory of gelatin plaques as explaining some of the more obscure workings of Miller's theory. I showed that acid-producing bacteria, which we have come to accept as the destructive agents in the first stages of caries, do not receive their nutrition from the teeth themselves, but chiefly from particles of starchy and saccharine food found in the mouth.

I quoted the results of experiments which I had made to show that saliva varied as a culture medium, and I drew attention to the fact that bacteria would multiply much more rapidly in the thick, ropy saliva which we sometimes observe, than in the clear, watery fluid which we have come to look upon as the normal secretion of a healthy mouth.

I pointed out what I believed to be a marked association between this thick viscid saliva and rapidly progressing caries; but I regret to say that I was unable to state with any degree of certainty what caused the physiological change which gave rise to this condition of viscosity. I went on to state that so-called gelatin plaques were found more frequently and were more widely distributed in mouths containing this thick, mucus-laden saliva than in mouths in which the secretions were normal.

I stated that in producing decay artificially in the laboratory the greatest possible differences existed in the resisting power of the teeth used in such experiments. From this fact, as well as from the clinical experience of many careful observers, I was forced to conclude that living teeth differ materially in their susceptibility to and immunity from the action of caries. I also stated that caries was more easily produced by mixed cultures than by a pure culture or any of the lactic-acid-producing bacteria.

This, together with a tribute to Dr. D. D. Smith of Philadelphia, for the courageous enforcement of his convictions in the prophylactic treatment of teeth, was the substance of the paper of which this is a continuation.

I wish now to call attention to other causes which tend to further the deterioration and destruction of human teeth. I shall point out some of the evil consequences of this retrograde metamorphosis, and shall offer a few suggestions as to the best means of working our way up to a better condition of the organs of mastication.

Whatever theories we may invent to explain the causes of dental caries, one fact stands out clearly and cannot be controverted, namely, that caries is practically unknown among uncivilized races; and that degeneration of tooth-structure follows civilization like a Nemesis. Sometimes the changes which follow contact with civilization are so marked and so rapid that they seem almost like an epidemic. More frequently, however, the change is slow, working gradually, but insidiously and surely through long generations, until we wonder if this is, indeed, a process of evolution against which it is useless to strive. We must not forget, however, that evolution in the human race differs from that in the lower animals in this, that it is within the power of our intelligence to control it. Thought is supreme, and if we want good teeth, and want them badly enough, good teeth will be evolved to supply our needs and our desires. It is for us to say whether the human race shall become edentulous, or whether it is worth while to combat the degeneracy already begun and swing the huge pendulum the other way by eradicating disease and improving the structure of the human teeth.

This degeneracy is, as you well know, principally brought about by a loss of functional activity due largely to our civilized methods of preparing food. We resent with indignation food that necessi-

tates vigorous mastication, and we allow our children to wash down their meals with copious draughts of water. Nature resents such treatment, and refuses to supply the necessary pabulum for maintaining a neglected organ. To functional activity she responds at once. When an organ is vigorously used waste material is taken up and active nutrition takes the place of stagnation. You might just as well confine an arm in a plaster-of-Paris cast, and expect it to retain its strength, as to deprive the teeth of the exercise of mastication and expect them to continue strong and well.

It is probable that the intensity of our modern life—the fearful nerve and brain tension that we are almost constantly under—has much to do with the degeneracy of our teeth. We note clinically a marked effect on the structure of teeth following an illness involving the nervous system, and we are familiar with the transparent, blue, rapidly-decaying teeth of the highly wrought, intensely nervous child. This burning up of the vital forces by excessive nervous and mental strain must be accepted as a factor in accounting for the deterioration of our teeth.

It is not improbable that the immediate cause of caries, which we believe to be acid-producing bacteria, is more active to-day than formerly, because of the too bountiful supply of starchy and saccharine food which enters the mouth. This food serves as a medium for bacterial activity. It is pointed out by Röse, as a result of experiments carried on in Baden and Thuringia, that the amount of calcium taken in through the food and water supply must be recognized as a factor in explaining the liability of teeth to carious action. This is probably true also as applied to the prenatal development of teeth. Another important factor in bringing about caries is so well recognized that I must apologize for mentioning it. I refer to irregularities. Irregularities may be due to the narrowing of the modern jaw, to the mixing of racial types, to faulty eruption of the permanent teeth, to adenoid growths, thumb-sucking, mouth-breathing, or to other causes. Whatever throws a tooth out of line and produces a lack of symmetry in the beautiful curve of the dental arch makes it difficult to properly cleanse the teeth. Whatever produces a faulty articulation makes it well-nigh impossible to keep up proper functional activity. A tooth without an antagonist is bound to deteriorate.

Besides these causes there are others which may be looked upon

as accidental or at least as occasional, such as congenital imperfections, prolonged illness, pregnancy, chemical agents, and traumatism, but time will hardly permit of a consideration of these causes. There is, however, one other consideration that we must refer to in this connection. Dr. Michaels of Paris, in his work on Sialo-Semeiology says, "The saliva of adolescence contains a dextrinic principle (glycogen) susceptible of fermentation under the influence of ptyalin in the presence of earthy salts. In this way is obtained the dissolution of the earthy salts by the substitution of lactic acid for carbonic acid." If this statement means anything, it means that lactic acid is formed in the mouth without the aid of bacteria, and that lactic acid so formed is capable of attacking the teeth and destroying them. Since reading Dr. Michaels' article I have sterilized and examined the saliva of a large number of children, and have in no instance been able to discover a trace of lactic acid that was not to be ascribed to acid-producing bacteria. While I have long believed that certain conditions of the saliva promoted carious action, I am equally sure that this is due to the fact that under certain conditions the saliva becomes a better culture medium and thus favors the increase of acid-producing bacteria. If it is true, as Dr. Michaels asserts, that lactic acid can be produced in the mouths of young people without the aid of bacteria, it is probably true also that the cases in which this change takes place are too infrequent to have any especial bearing on the subject we are now considering.

Having touched briefly upon the causes which assist in bringing about degeneration and loss of teeth, and before taking up the evil effects produced by diseases of these organs, let us pause a moment to consider how wide-spread the evil really is. Dr. Denison Pedley of England made some interesting studies of the teeth of school children in that country, and found that seventy-five per cent of the children examined had diseased teeth. This is a low estimate as compared with the condition on the continent of Europe and in this country. Statistics indicate that nearly ninety-seven per cent of all our public school children have carious teeth. It is not too much to say that thirty per cent of all the teeth of school children between the ages of five and fifteen in the public schools of this country are diseased. This is appalling when we know that only a small proportion of these children will ever receive treatment at the hands of a competent dentist; and when we realize that without such treat-

ment they must inevitably go from bad to worse, the situation becomes truly alarming. It is rendered more striking when we realize that in spite of unhygienic surroundings only two and a half per cent of the Eskimos have carious teeth; while the Indian and Malay tribes, having been smirched, but not yet conquered, by civilization, still dwell in comparative ignorance of caries, only ten per cent of their number being as yet afflicted.

It is not necessary to dwell on these facts to show what a menace to health and to mental and moral progress we have confronting us. Many of these unfortunate school children suffer with intermittent toothache for years; and thanking God for the intermissions, they bravely accept the condition as a part of their lives. What sort of mental and moral development can go on when burdened with such a handicap; and what an effort upon the child's health and physical development must such a condition bring about! I tell you that physical and moral degeneracy, idleness and crime may have a more intimate association with caries than we are willing to admit. To emphasize the necessity of a reformation in our care of the teeth, let us consider the relation of diseases of the dental organs to general diseases.

Three years ago Dr. Charles Stedman Bull, speaking before this society, pointed out the connection between diseases of the eye and dental lesions, in a paper so able that it attracted the attention of the medical profession throughout the country. Without now going into details, you may remember that he proved conclusively that keratitis, glaucoma, muscular paralysis, asthenopia, amblyopia without visible lesions, supraorbital neuralgia, and exophthalmos with and without cellulitis are frequently caused directly or indirectly by carious teeth. He showed that eye-complications of dental disease are of varied nature and may reach to the most superficial structures of the eye. He spoke most positively when he said that when we come to consider the lesions of the cornea and sclera, the cases reported in connection with diseased teeth are almost numberless. Cases of loss of accommodation from paralysis of the ciliary muscles have been shown to be in many instances due to diseased teeth, and optic neuritis ending in atrophy of the nerve and blindness has also been traced to carious teeth.

We are perfectly familiar with diseases of the nasal and accessory cavities which have their origin in dental lesions. We have too

often witnessed antral and aural disturbances dependent upon carious teeth not to fully appreciate the intimate relationship between these parts. It is a well-established fact that otalgia of a very pronounced type not infrequently arises from a carious tooth. Nervous interference with the nutrition of the middle ear may be due to dental disorders, and may cause impairment of hearing. In fact, when we consider the reflex disturbances due to diseases of the teeth we are at a loss for space to enumerate them.

When it comes to diseases of bacterial origin, we find that with few exceptions all bacteria find their way into the general system through the mouth. I have myself found the tubercle bacillus, the Klebs-Loeffler bacillus, actinomycosis, and many pyogenic forms in mouths of supposedly healthy people. A correspondent of *La Revue Médicale* reported 113 cases of lymphadenoma in children. In forty-one per cent dental caries was the only cause that could be found, and it is fair to infer that in a much larger percentage complications of caries were present. Chronic glandular swellings in the neck are dependent upon caries in a majority of instances. It has been found in several cases of tuberculous infection that the bacillus invaded the organism through a decayed tooth. Many cases are reported to show that primary tuberculosis of the mouth, which happily is not very common, generally shows itself first around a diseased tooth or root. General infections of septicemia followed by death are frequently reported, and in far too many cases these have their origin in a diseased tooth. Numerous cases of pyemia, periostitis, otitis, and metastatic abscesses resulting in death have been shown to have originated in carious teeth. When we come to consider gastric troubles, the number proceeding from imperfect mastication caused by a neglected or diseased condition of the mouth and teeth far exceeds those from all other causes put together.

I could go on multiplying indefinitely those cases in which general disease is dependent upon dental lesions, but I have said enough to show that our professional work can no longer be confined to its present narrow limits, but that we must face broader and more important questions than now occupy our minds, if we are to make a permanent and useful impression upon the human race.

The question immediately arises, Is it worth while? We are doing our work in a comfortable way, showing more or less skill, and, it cannot be denied, doing more or less good; and we have a

comfortable income. Why excite ourselves about the rest of the world? Well, of course, if we are content to eat, drink, marry, and die, it is not worth while; but, thank God, that is not the kind of men the dental profession is composed of to any great extent! As I said in my first paper, it is one of the few professions in which men are striving to cut off the sources of their income by substituting prevention for cure. It is a profession that has had from its beginning the welfare of the patient at heart and has striven earnestly for the improvement of the human race. Scamps and charlatans belong to all trades and professions, but the proportion is comparatively small in the dental profession. The work is too hard and too exacting, and the dishonest and loose-fibered man can do better in some other walk of life. Therefore I feel that it is necessary only to show that this work of preventing caries is feasible, that it is important to the improvement of the human race, and that a fair degree or success awaits our efforts, to have every honest member of the profession do his part in bringing about the desired reformation.

When I make the assertion that the development of the dental organs and the strength of the same is and will always be in ratio to their use; when I say that lack of use will infallibly tend to weaken and to the suppression of these organs, I am simply stating a well-known scientific principle, and do not wish to be misunderstood. I do not know what the intention of the Almighty is in regard to the future of the human race, and I do not believe any one else knows. If we conscientiously believe that in the process of evolution the teeth are doomed; that it is fruitless to waste our time in combating the degeneracy that has already obtained so strong a foothold, it is our duty to help on the process by wholesale extraction, so that we may have at least clean gums and clean mouths and lessen thereby the danger of that general infection which I have shown to be associated with diseased teeth.

The thought is repulsive to you, but it is not illogical. As a matter of fact, strong teeth are associated with and are essential to the best types of manhood. If my statement seems startling I can show good grounds for making it. In the first place, it has been shown by the examination of the teeth of school children in England, on the continent of Europe, and in this country that there does exist a ratio between the physical soundness and mental acuteness of the child and the condition of his teeth. I am not willing to

pervert facts by saying that this ratio is very pronounced, but I firmly believe that it will be more emphatically shown when the investigations have been carried farther. The child with strong teeth will be found to have decidedly the best of it, both physically and mentally, and that he will be morally stronger will follow as a matter of course. As the age of the child advances the difference seems to be more marked, and when we reach the age when in this country boys enter college, the fact begins to be established in a remarkable degree.

I have had for patients a large number of college students, and my interest in college sports has brought me into intimate relations with the trainers, coaches, and captains of crews and teams. In this way I have had opportunity to examine the mouths of a large number of the members of "Varsity" crews and foot-ball teams, and of other college athletes. I have naturally been led to make inquiries of other dentists regarding this class of men, and have also gained a great deal of information from trainers and others interested in college athletics. I have not been able to classify and tabulate the results of my examinations, for in most cases such an examination would be hasty and casual—usually made in the dressing-room before or after an afternoon's practice—but the results are striking. The proportion of strong sets of teeth among these young men is greatly above the average, and can be seen in the most superficial examination. I cannot deny that great intellectuality is often seen in association with weak teeth, nor can it be denied that men of large physique frequently have poor teeth, but that combination of vital energy and mental strength which goes to make commanders and vigorous pioneers is rarely found in association with frail teeth. Our beloved Washington was one of the rare exceptions. If it is true, then, that deterioration of the dental organs will cause a general deterioration in the human race, our duty is plain, and we are bound to apply our energies to combating this great evil.

In my last paper I marked out a line of treatment which will, I am persuaded, prevent a large percentage of decay and will carry a child through life without a large filling or other serious operation. Without repeating, it is sufficient to say that the plan consists in frequent examinations and frequent polishing. Once or twice in our professional lives we meet with a conscientious mother who insists upon having her child's teeth taken care of. If there is a speck or

shadow on the infant teeth she comes and demands an appointment. She pesters us with questions as to the care of the child's teeth, and insists upon our making the most minute examinations and doing the most careful polishing. She makes life a burden to us by her insistence, and we are almost ashamed to make a charge for the slight and seemingly unnecessary operations which we perform. But what is the result? If a spot is discovered which marks the first step of caries, we polish and polish until it disappears, and no cavity results. The teeth strengthen, and we find that when the child grows up the teeth are strong and only a few small fillings have ever been inserted. We give ourselves small credit for this result, and in our blindness believe that the child's teeth were naturally strong and resistant to decay, when, as a matter of fact, our own efforts, called forth by one of those God-given mothers, have produced this wonderful result. Did you ever know any other result in such a case? Is it not almost inevitable that such a child will have excellent teeth? It is only necessary to apply this same treatment to all children to have uniformly strong and healthy teeth.

We ought to take the initiative, and not wait to be prodded into doing our duty. It is for us to educate the mother about the care of the mouth. We should point out the importance of proper mastication and show how suicidal it is to allow the little ones to wash down each mouthful with water. It is within our province to inquire into the feeding of the child and to make suggestions on this subject, and I can assure you that in most cases these suggestions will be received with gratitude and the attempt will be made to improve the faulty diet. I have very little faith in the practice of feeding special foods for a special purpose, because we know so little of the marvellous chemistry of digestion and assimilation that we cannot follow the food to its ulterior depository, and the phosphates that we feed to nourish the brain may, for aught we know, find their final resting-place in the joint of a big toe. We do know, however, that certain foods are insufficient to nourish certain organs; that finely bolted flour, for instance, will not build up tooth-structure, while whole wheat contains the nutrient ingredients.

With the knowledge we have of the means of prevention, with the readiness with which our views are accepted by our patients, there should be little or no trouble in reducing caries to a minimum in private practice. Three-fifths of the dental operations performed

in the last twenty years were preventable. Will it be possible to make that statement at the end of the next twenty years, or shall we have succeeded in reducing that proportion? I have not spoken of brushing the teeth nor of the use of washes, for I have nothing to say that you do not already understand. There is, however, another important aspect to this question which we must consider, and that is the condition of the teeth of the poorer classes.

Poor teeth cause poor digestion. Irritability of the stomach produces a craving for alcohol, and alcohol causes crime. Ergo, unhealthy teeth lead to unhealthy morals. This may sound like the Darwinian theorem which demonstrates that the old maids of England are the cause of her vigorous manhood. The bone and muscle of Englishmen are derived from the excellent quality of the English beef and mutton. These fine cattle and sheep feed chiefly upon clover. The clover is fecundated by bees that carry the pollen from one plant to the other. Field mice are the enemies of bees and destroy their nests. Cats are the enemies of field-mice and destroy them, and the old maids care for the cats and encourage their increase, and hence are the cause of the strength of the men. It is an interesting chain, but no such roundabout method of reasoning is needed to show that the proper conservation of the teeth is essential to health and happiness. So far as the well-to-do classes are concerned, I believe that the tide has already turned, and that the effect of prophylaxis is beginning to be felt, but the question of what we shall do for the teeth of the poor calls for our most thoughtful and prayerful consideration.

In the economy of human life the teeth are of no less importance than eyes, ears, throat, lungs, spine, or any other portion of our anatomy. But while for diseases of every other part of the body free hospitals and dispensaries offer to the poor every facility for treatment, there is not, to my knowledge, throughout the length and breadth of this land a single place where a person unable to pay a fee can have the tortures of an aching tooth assuaged by competent hands. I do not forget the excellent work done in our college dispensaries, but that, as you know, is so small in amount compared to the great need of such work that it only points out more emphatically the need of free dispensaries for the poor. While we are trying to influence legislation, and are bringing this matter to the favorable notice of State and city governments, there should be

little difficulty in getting a private endowment for one or two such institutions. There are ten or a dozen men before me to-night who could each raise fifty or a hundred thousand dollars among his own patients for such an object as this. These institutions, started perhaps by private means, would soon demonstrate that from economic motives their existence and usefulness should be maintained. The decrease of crime, the lessening of disease, the improvement in physical and mental conditions would be soon remarked, and these institutions would form an important part of our public education by teaching oral hygiene. That there would at first be opposition springing from the ignorance of the poor there is no doubt. They have an exaggerated dread of all dental operations. This would be soon overcome if the dispensaries were in the hands of wise and kindly men. Good teeth should be made a prerequisite for attendance in our public schools, just as vaccination is required at the present time. To bring about these changes we must gain the cooperation of medical men, and this we can do in a large measure through our personal acquaintance. We must influence the instructors in our dental schools so that this subject may hold a more prominent place in the college curriculum. Dental sanitation should occupy a large space in our books on hygiene and in our dental and medical literature, and, most important of all, our dental societies should become interested and take the initial step in starting this reformation. And that is what I am here for to-night. My convictions are from long and earnest study, and I have drawn no chimerical picture of the needs of our race; nor do I believe that if we give our hearts and hands to the work of improvement the undertaking will be beyond our strength.—*International, Feb , 1902.*

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NERVE REGENERATION. The healing of nerves is a subject of much scientific as well as actual practical interest. At the present time most investigators hold that when a peripheral nerve regenerates, either after division or degeneration, the peripheral segment undergoes "neurotization" from the end of the proximal portion. This means that the ends of the axons above the point of division or degeneration grow out into the distal part of the nerve, the continuity of which is thereby restored. Clinical surgery teaches that this process may require weeks and months for its completion. But there is another view, at the present time held by a small number

only, which teaches that in nerve regeneration axons, medullary sheaths, and neurilemmata are formed from cells in the distal segment, called neuroblasts, and that the fusion of the different parts thus produced with one another and with the central part restores the continuity of the nerve trunk. This theory, which may be called the peripheral theory, is not in harmony with our present conception of neurons, each of which is regarded as a complete cellular unit capable of regenerating its lost parts, at least within certain limits.

The most recent investigation in nerve regeneration is by the two Englishmen, Charles A. Ballance and Purves Stewart, whose numerous experiments gave results that in their view are reconcilable only with the peripheral theory of regeneration. Ballance and Stewart find that when a nerve trunk is divided the axons and myelin sheaths soon suffer a fragmentary disintegration followed by absorption, which eventually extends throughout the entire nerve distal to the point of division, while in the proximal end there is only limited degeneration, the cut fibers curving back and forming a more or less distinct bulb-like swelling. The subsequent regenerative changes take place in about the same manner whether or not the cut ends are united by suture or other means. The cells of the neurilemma take on active neuroblastic function and produce short lengths of axons and myelin sheaths, which, linking themselves together, form continuous nerve fibers. At first the new sheaths are beaded, due it is thought to the presence at more or less regular intervals of cells which produce the myelin. Finally, the cells become less conspicuous and are recognizable at the internodal points only. In the scar tissue that always forms between the ends of a divided nerve, the new sheaths increase in number from above downward and not from below upward as would be the case did the new sheaths represent downgrowths of the old. In transplantation experiments the engrafted nerve acts as a scaffolding for the invading neuroblasts which enter chiefly by the side of new blood-vessels. As regards the axons, our authors state that from the appearances obtained by various methods "it is clear that regeneration of axis cylinders does not take place by a process of outgrowth from the proximal segment, but is commenced and completed by the activity of cells already existing in the trunk of the nerve." As stated, the junction of the proximal and distal segments of a divided nerve is not

essential for the regeneration of axons in the distal part, but the axons that form under such conditions do not attain maturity. As the proliferating neurilemma sheaths finish their activity as producers of myelin and axons they arrange themselves in columns and coalesce into new neurilemmata enclosing the newly-formed myelin, which in turn is wrapped around a new axon.

Such in brevity is the manner in which nerves heal, according to the English investigators. They regard the peripheral nervous system as composed of chains of neuroblasts fused to form neurilemmata, myelin sheaths, and axons. The limited degree of regeneration of axons in the central nervous system, as seen, for example, in hemisection of the cord, they would explain as dependent upon the absence here of neurilemmata, which are of fundamental import in regeneration of axons and myelin sheaths. The neuron theory must be abandoned, because it is not in harmony with the facts observed by them in the healing of peripheral nerves. In the literature are several examples of early return of sensation after secondary suture of divided nerves. Jessop, Langenbeck and MacCormac have recorded cases of secondary nerve suture in which sensation returned on the eighth day, the seventh day, and the same day after the operation, and other cases of like nature might be cited. Ballance and Stewart point out that this early return of sensation after secondary suture is easily explained on the score of "peripheral regeneration" of nerves, the secondary suture restoring the conductivity of the otherwise quite fully regenerated parts. But there are many conflicting statements in the literature in regard to the early return of sensation after secondary suture, and it is noteworthy that there is no early return of motion under similar conditions; for this reason much weight can not be attached to the significance of the early return of sensation after secondary suture in its bearing upon the mode of regeneration.

Without attempting minute criticism of the work of Ballance and Stewart, it may be permissible to point out the general fact that the peripheral degeneration distal to the point of division of a nerve does not harmonize well with the theory that regeneration is accomplished by the neurilemma cells taking on neuroblastic functions. If these cells have the power to form pieces of axons and medullary sheaths, at first discontinuous, it becomes rather puzzling to attempt to discover any good explanation for the degeneration that follows

division. It rather would seem that the peripheral end, if of peripheral origin, might maintain its vitality at least for a time even though its connection with the central neurocytes is severed. Degeneration after nerve division is easily understood when we regard the neuron as a functional, nutritive and anatomic unit. Further investigations are necessary before the neuron concept now in vogue is materially modified.—*Edit. in Jour. A. M. A., March, 1902.*

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MOISTURE AND WEAK TOOTH STRUCTURE. By Dr. F. F. Hawkins, Troy, N. Y. Read before the Third District Dental Society of New York, Oct. 15, 1901. I wish to state a proposition: Just in proportion to the moisture within a tooth is its structure weak and vulnerable. Moisture is defined as: "that which makes damp," "liquid in small quantity"—and it is the presence or absence of this moisture within a tooth that often counts for or against success in dental work.

The teeth never remain in a static condition. They are either progressing healthfully toward their highest efficiency or they are retrograding. They never stand still as regards the proportion of their constituent elements. The enamel and its fibres, the dentin and its canals of myxomatous tissue, the cementum and its lacunæ of protoplasm, all are ever changing.

The heart in its labor is forcing with each beat to the extremest peripheral point the fluids of the circulation—carrying, if the person is in perfect health, the tooth-forming material necessary for perfect construction, and laying the foundation for the greatest resistance against attack. If, however, the person is in ill health and remains below par for any great length of time, the heart's action fails to build the part, and the tearing-down process begins and continues until dissolution is accomplished. Why is this? It is because the function of nutrition has been disturbed. The food, the drink, or the air taken in by the person has been insufficient or impure. The tooth material has not been supplied to the blood corpuscles, and when the circulating fluid ramifies the tooth structure it is not the good and faithful servant it was during health, to deposit the minute particles of lime salts, and renew the tired medullary tissues so that they can continue their work and vigils joyously—they cry out for help which does not come, until weakened by neglect, the parts, like the soldiers of a deserting general,

begin to retreat with each ebb of the heart's tide until all that would have so gallantly withstood the attacks from without, had they been reinforced, have fled, leaving little but moisture for defense—and when our little explorer passes through the softened enamel and the patient cries out, we know the past history of the case, and see our trouble ahead.

Bödecker's Views.—Bödecker says, "Enamel was for a long time considered to be a deposit of purified lime salts, a coat of mail destitute of life, but researches have demonstrated the presence of living matter *between* and *within* the enamel prisms, and consequently affirm that enamel is a tissue with properties of life." He says, "Nothing, however, was known as to the seat of life in dentin until I and others endeavored to prove not only that dentinal fibres and their coarse offshoots are formations of living matter, but that the basis substance, so rich in lime salts, is traversed by an extremely delicate filagree of living matter as well. With the facts before us we may attempt to approach the solution of a hitherto insoluble riddle—the nutrition of the dentin and enamel. No close observer will doubt that the nutrition of the teeth is and must be an active one. This is proven not only by the growth of these tissues, but also by the same tissue's strikingly rapid loss of lime salts in constitutional diseases, such as neurasthenia, anemia and even pregnancy. How are the lime salts deposited in the dentin, and how can they be removed to such a degree that dentin originally hard becomes in a few months soft and resistless? Looking at the dentinal canaliculi with the highest powers of the microscope we see between the dentinal fibre and the walls of the canaliculus a narrow, light space, evidently filled with liquid, which serves for the carrying of nourishing material to the dentin and for carrying of effete material away from it. We are prepared to acknowledge the possibility that in living dentin the living matter proper is at no time perfectly at rest; that on the contrary it is contracting slowly but continuously, and through its contractions it not only stirs the surrounding columns of liquid, but pumps, as it were, nourishing material *into* the minutest fields of the dentin or away from them.

"The mechanical character of the liquid may explain the dissolution of a certain amount of the lime salts deposited in the blocklets of the basis substance, which salts, thus being rendered effete, may be carried into the lymphatics of the pulp, and thence into the lymph system of the body for further elimination. Why in one instance nourishing material should be carried from the blood-vessels of the pulp *into* the dentin, and in another instance carried *away* from the dentin into the lymphatics, we are unable to understand.

"What I have stated concerning the tissue of dentin unquestionably holds good for the tissue of enamel also, and every dentist must

have observed instances of softening of the enamel as the result of constitutional ailments. Recalcification—rehardening of the enamel, is certainly a fact. The structure of the enamel fibres, between the prisms as well as those traversing the latter, points to the identity of the process of nutrition, and denutrition, with that of the dentin."

The dentin and enamel receive their nourishment through the blood-vessels of the pulp, while the cementum, which is an ever-growing portion of the tooth—thickening as age advances, and deriving its supply from the pericementum, is liable to mutations through good or ill health. Dr. Black seems to have given the dental profession the impression that all teeth are the same—that is, that there are no soft teeth, and no hard teeth, but just teeth.

Taft's Views. Dr. Taft in recent remarks on this point says, "Every practicing dentist recognizes the difference between the structure of one tooth and another; some cut easily with chisel and bur, while with others it is almost impossible to break down. Now, this is not so much a difference in the structure of the teeth, so far as the constituents of the teeth are concerned, but a difference in the relation of the enamel rods one to another. If these two teeth are analyzed chemically you will find as large a percentage of lime salts in the one as in the other. This difference is due simply to the arrangement of the enamel prisms, and not the chemical difference in structure. In some cases the prisms run more regularly, and radiate straight out upon the dentin, one beside the other, and the cement substance which holds these prisms together is easily broken down. In other cases these prisms are wavy, irregular and hold firmly together, and it would be necessary to break across a prism in order to fracture the structure. But the truth is, that the teeth which are so resistant to our instruments may be just as readily attacked and broken down by the cause of caries as would be a poorly constructed tooth. The point I wish to make is this, it is more a question of environment, the conditions surrounding the teeth, than tooth structure itself which makes the difference in susceptibility to decay."

The Author's Views. Now, here is Dr. Taft trying to explain Dr. Black, and he has misled us decidedly. For when he says, "Teeth which are so resistant to our instruments may be just as readily attacked and broken down by the cause of caries as would be a poorly constructed tooth," and when he further says—"the point I wish to make is that environment and not tooth structure has more to do with susceptibility to decay"—he tells us something which we have a pardonable right to doubt when we consider how the tooth is nourished, and how it is *denourished*. If we consider

a single tooth in the mouth of a perfectly healthy person, one who has been perfectly nourished from birth, we follow in our minds the building of that tooth as the blood-vessels come freighted with the proper tooth pabulum, with the vital force within the tooth busily functioning to construct enduringly, packing the lime salts so carefully that attacks from without will find no vulnerable point—shaping the little canals for the future highways through which to bear the nutrient material to build and build till life ends. This is the history of health, and the tooth constructed under its supervision will withstand all the accidental environments which may overtake it. But, again, let us follow the building of a tooth in the mouth of a person who through life has been in ill health, and fought every day to live. We find the vital force in this tooth tired and weary—the blood supply which comes to it is always deficient in lime salts, always defiant in protoplasmic elements, so that, work as hard and faithfully as it can the vital force constructs but a poor home for its future occupancy, its walls are porous, and its rooms are large and full of moisture. This tooth is vulnerable at any point or *en masse*. This is the difference between good and poor tooth structure, and it must play an important part in our work. In severe and exhausting sickness the poor tooth goes to pieces quickly because its poor structure makes it liable to attack from within, even the material which has been so begrudgingly brought to it is taken away, the parts are broken down and withdrawn for use in other parts, the vital force is so weakened that it permits the invader to enter and take out the basis substance and give in return just a circulating fluid. This is the time when tooth environment may be spoken of as an agency of decay. The environment is there for the same reason that the tooth is deficient in lime salts. When the organs of the body fail to function normally—from whatever cause—then is the time when the weak tooth suffers from within and from environment also. The causes which rob the internal structure of the tooth of its resistance are the same causes which pour vitiating secretions over it, and blow corroding gases from the stomach and poisonous exhalations from the lungs on it.

The tooth of the ten-year-old, and the same tooth at fifty is strong in proportion to the absence of moisture. Take, for experiment, a plaster tooth that is thoroughly dry—dried perhaps for years—and you will find it is hard to cut or carve. Now dip this same tooth in

water and note the change in its crushing resistance. There is no more or no less lime in this plaster tooth than before, but the moisture has lessened the cohesion of its mass. Again, take this same dry plaster tooth and place a soft pellet of cotton dipped in C. P. sulphuric acid against it on one side, and you will notice very little change. Now, from the opposite side with a dropper, thoroughly saturate the tooth with water, and as it approaches the acid you will see the plaster tooth gradually disorganize at that point. I speak of this to emphasize the fact that weak, moist tooth structure is quite necessary to bring out the full potency of environment, and this brings me around to my initial assertion—that just in proportion to the moisture within a tooth, is its structure weak and vulnerable.—*Items, Feb., 1902.*

* * *

SHALL YOUNG CHILDREN BE GIVEN MEAT. An interesting article on the feeding of growing children after the nursing period appears in the *Medical Record* for January 15, from the pen of Dr. J. E. Winters of New York. Sketched briefly his ideas are as follows: From the seventh to the tenth months the ferments which digest farinaceous foods are secreted in sufficient quantity, so cereals should be given. The author prefers oatmeal, since it is rich in fat, proteid and mineral matter, and especially in iron, in which milk is deficient. To remove the cellulose it is cooked and strained and a tablespoonful of the jelly added to every second bottle of milk, this amount being gradually increased. During the summer months barley gruel is preferred.

When the child is a year old eggs are given, at first in very small quantity, then increased. They are very rich in proteid, fat and mineral matter; the nuclein of the yolk contains salts of lime, phosphoric acid and iron in an easily absorbable form. During this period dry crusts of bread are given, at first twice a day. Eating of it develops the masticatory organs, and it is one of the most useful foods. Cereals should be given without sugar, which has a strong affinity for water, which it abstracts from the mucous membranes, causing indigestion. Fruits (orange juice and prune pulp) are useful at this stage.

As the child grows older and enters upon a stage of rapid development the author points out certain principles of treatment. He shows that it needs a considerable quantity of proteids for body

growth, much more of the mineral salts for the bony framework of the body than the adult, carbohydrates in large quantity for heat and energy production, and especially to spare the permanent tissues and fats for similar purposes and also because of the relatively large proportion of fats found in brain, nerves and bone-marrow. A child of five requires half as much fat as a man doing moderate work.

Coming to the question of flesh food, beef contains four or five times as much nitrogenous matter as milk, but comparatively little of this is in the form of proteids and available for food; extractives make up 15 per cent of the nitrogenous part of meat, and they are not only valueless for food purposes but may be positively injurious to young children.

Continuing, the author says: "The excess of proteids and extractives contained in flesh foods acts as a stimulus to some reflex nervous machinery through which metabolism of all tissues is hurried on. In a child combustion is relatively greater than in an adult for two reasons—first, the smaller organism having the relatively larger surface carries on a more rapid metabolism per unit of body weight; second, the metabolism of the growing parts of the body is from $2\frac{1}{2}$ to 6 3-10 greater than that of the parts already formed.

"The proteids and extractives from flesh foods stimulate the normally active metabolism of a child, and prevent storing of the tissue-builders. Overstimulation of metabolism by an excess of animal food interferes with laying on flesh—fat or muscular flesh. Carbohydrates are easily oxidized, and their oxidation serves to protect the proteids and fats from consumption. The shielding from oxidation of these requisites for the growth and development of new structures is a matter of profound value and consequence to a growing child. Carbohydrates and fats by their sparing action increase the store of proteids. A child increasing its capital of flesh tissue should have proteid-sparing food in abundance, and food which stimulates metabolism should be given in such quantity only as is necessary for the actual requirements of the system's daily needs.

"The brain appears to require nitrogen, which can be obtained only in a concentrated form from animal sources. Highly nitrogenized food is a nervous food, valuable where bodily energy and intellectual capacity must be assured without taxing the digestive organs.

"Muscles do their work upon carbohydrates; a child, with its

unceasing, acrobatic, muscular feats, should have an abundance of that food which is regarded as the most valuable source of muscle-energy, and the sensitive, nervous system should not be stimulated by a nervous food.

"One of the most unfortunate, wholly unconsidered, evil consequences of an early and liberal meat diet is the disrelish it creates for the physiological foods of childhood—cereals, vegetables, milk. A child that is allowed a generous meat diet is certain to refuse cereals and vegetables. Meat, by its stimulating effect, produces a habit as surely as does alcohol, tea or coffee, and a distaste for less satisfying foods. The foods which the meat-eating child eschews contain in large proportions certain mineral constituents which are essential to bodily nutrition and health, and without which the processes of fresh growth and development are stunted. This brings us to the kernel of our subject.

"The chemical processes in the organism are dependent upon alkaline-reacting tissue-fluids. In the combustion of flesh foods (proteids) in the organism sulphuric acid is formed, and death may be caused by a lack of alkaline bases necessary to neutralize this acid product. The function of every individual cell, the nutrition of every tissue, the perfect consummation of every chemical process in the organism are dependent upon alkaline-reacting tissue-fluids, which alkaline reaction is due to alkali-carbonates.

"These alkaline bases are also of great importance as constituents of certain secretions, such as the saliva, the pancreatic and intestinal secretions, and for the transportation of carbonic acid in the blood, that it may be removed from the system.

"For the processes of fresh growth, for the construction of bone, muscle, etc., mineral constituents are likewise required in large proportions.

"For the supply of alkali-carbonates for the tissue-fluids; for the alkalinity of the blood and the numerous secretions which are poured forth in almost incalculable quantities during every twenty-four hours; for the transportation and elimination of carbonic acid from the system; to neutralize the sulphuric acid formed in the combustion of the proteids; for the passage of the proteids from a soluble to a coagulable state, and for the organization of the proteids; for the supply of the large amount of minerals needed for the growth of the bony framework, and for the muscles of the growing

child, alkaline bases must be introduced into the system in large amount. The nutritive value of food substances is generally estimated by their proportions of proteids, fats, and carbohydrates. In a child the mineral constituents are equally important with any of these.

"These mineral constituents cannot be introduced into the system in an assimilable form except in organic combination with an albuminous molecule, and are found only in organic combination in sufficient proportions to meet the large demands in a child in certain vegetables and cereals which obtain them direct from the soil as provided by nature.

"The evil fruit, the pathological consequence of this unphysiological and abnormal feeding, is to overstimulate the delicate nervous organization, with undeveloped controlling centers and almost completely developed sympathetic nerves; to tax the system with incompletely burned, merely charred, excretory products; to render the urine, which in the young child is normally highly acid, abnormally so; and in its train, incontinence of urine, rheumatism, chorea, rheumatic tonsillitis and torticollis, night terrors, urticaria, angioneurotic edema, and finally, from poisonous excrementitious products, anemia, acute convulsions and petit mal.

"Physiology and physiological chemistry make it unquestionably clear that meat should not be given in early childhood. Experience demonstrates and proves the accuracy and the value of physiological teaching. The ever-active, muscle-laboring, growing child, with its rapid heat loss, should have an abundance of cereals, vegetables and milk in its diet to meet physiological requirements.

"Children in whose diet meat is a large factor have not the robustness and vigor, the freedom from attacks of ill-health, witnessed in those who have meat but sparingly. A disproportion of animal food in the diet of a child, by overstimulation of metabolism, leads to imperfect tissue-nutrition, delicacy of constitution, and irritability and peevishness of disposition; the resisting powers of the organism are impaired; the susceptibility to disease heightened. Meat juice should not be given to a healthy child under two years old, and then in quantities not to exceed half an ounce to one ounce three times a week. The healthiest children are those who have meat only every second day up to the age of five and six years.

"Suitable adaptation of the different food constituents to cover

the large demand for heat and energy, and for the storing of proteids, minerals, and fat for future needs, is the paramount consideration in the diet of a child."

* * *

ULCERATION FROM CARIOUS TOOTH. By Dr. H. H. Grant, Louisville. I have seen within the last week a case which is of interest in one particular at least. A young woman, aged 21, for over two years had had more or less irritation on the left side of her face just below the angle of the jaw, and about a year ago the last molar erupted just at that point, and there was an ulceration completely surrounding it. Nothing was done for it and the tooth was not extracted. She was sent to me as a clinical patient, and was seen by a number of dentists, who were much interested in the case, as it seemed to be a rather unusual condition. I incised the tissues around the tooth, and found that not only the tooth but the alveolar border of the superior maxillary bone had turned outward with it, and the tooth was really seated in the same way as it would have been in the normal position in the jaw, surrounded by the alveolus. The tooth was extracted, the alveolar walls chiseled off, and the wound closed by interrupted sutures of silkworm gut and completely closed, except at the lower border. It has now healed, except at the point where I put in a drainage tube. The patient is now seemingly well, but the swelling which was present, and had been present for nearly a year, has not yet entirely disappeared. There was a distinct infiltration of inflammatory exudate, and there is considerable difference between the two cheeks at the present time. Whether this will all disappear or not, I am unable to say.

The unusual feature about the case is that the alveolus and tooth turned outward, so that the tooth with its cutting edge appeared directly through the skin, and had remained in that position as a foreign body for over a year. I have once before seen a troublesome ulceration of this kind in the gum, the tooth being extracted through the mucous membrane, but I have never before seen a complete turning out of the alveolus where there was no trouble with the mucous membrane. In the case just reported the tooth had gone completely through the skin and appeared externally. It will leave more or less scar on the cheek, and it is rather astonishing that a patient of this age should have gone on without any treatment for this length of time when the condition could have been cured with little trouble two years ago. It was a surprise to all the dentists who saw the case that there was no ulceration of the mucous membrane.—*Louisville Jour. of Med. and Surg.*, May, 1902.

Letters.

DOCK MEASLEY GIVES THE BOSS SOME POINTERS.

(AS TOLD BY THE OFFICE BOY.)

One morning Dock Measley, what ain't been practicin' only Two Years, he come into our Offis to Vulcanize a Plate. He was there more than two hours, an' I seen he was Takin' Notes o' some things the Boss done durin' that Time. There was one lady that had had some Tartar cleaned off her front teeth, an' the Boss never charged her nothin', 'cause it only took a Minute. So I reckon she thought then she'd order be agreeable some way to make up, so she begun to talk about Tooth Powders. Says she, "What do you think is the best powder, Dock Contour? I've always used Precipitated Chalk an' Orris Root, an' I reckon they ain't nothin' better, is they?" Then the Boss he explained that them two things was ingredients o' most all Tooth Powders, an' other things was required in a Powder, an' he said they was several good preparations fer Teeth. Juneberry & Brown's paste, So's-you-don't, an' lots of others. He was about Half a Hour tellin' her, an' she said she had learned a Lot, an' she was a-goin' to tell all her Friends. An' then, after she'd Ast him Was Dock Peabody a Good Dentist, an' was Candy good for Children's teeth, an' had you Orter use a Stiff tooth-brush, she went away. Then Dock Measley he Opened Up. Says he, "Do you know how long you were talkin' to that Woman? Forty minutes by the watch. Do you know how mutch Good you Done her, a-tellin' her all that? Jis' none at all. Not a Blamed Bit. You Watch Out an' you'll see that Woman a-comin' in your Offis in three or four Months, an' she'll say, 'Dock Contour, I always use Prepared Chalk an' Orris Root as a Dentifrice. I don't reckon they's anything better, is there?' showin' she ain't minded a word you've said. Then you'll have to Pump another Dental College lecture three-quarters of an Hour long into her."

The Boss he looked Offul Supprised. "Why that's exactly what she did say, when she was in here about two months ago. An' you heered her say it agin, jis' now. An' I told her all I've jis' been a-tellin' her, that other time." "Exactly so," said Dock Measley. "Now you listen to me: you don't never want to stand talkin' to Patients about triflin' matters o' that Kind. You'd order make

them think you're too busy. That's the Very Way to demoralize your Business. You see that Woman she's Unconsciously got the Impression now that your Time ain't of no great Value, an' the first time she makes an engagement she's liable to break it without sending you any Word. Listen here, to how I do. When a Woman asts me that question about Tooth Powders, I turn to my young lady Offis Girl, an' I say, 'Susie, fetch me a bottle of our Unrivalled Tooth Powder?' I don't say nothin' about no other Kinds, an' I don't tell her whether Orris Root an' Precipitated Chalk is any good or not. I say, 'This is what your teeth Require. Fifty Cents, please.' An' I look Firm an' Composed, an' she don't never say 'charge it in the bill,' but she pulls out her Purse an' pays right away. Of course she never comes back for some more tooth powder, but she never Bores me again about Orris Root an' Precipitated Chalk, either."

Dock Measley smiled, like it was a Good Joke. Says he, "Some Dentists thinks it ain't Perfessional to sell Tooth Powder. But you note this down; things that is unperfessional from one point o' View ain't necessarily so from the Patient's point of View. The Reel Point is to make the patient Pay fer everything he gets from you. They ain't anything more Important than that. It's the havin' to Pay that makes them rate you above a Dry-Goods clerk. Patients don't care a Dern whether us Dentists is Perfessional Men or not. The reel p'int is to make them Respect you, an' 'not to let them fool your time away.'"

I could see the Boss he jis' didn't know how to Express his admiration. Dock Measley, he Went On—"Make 'em Pay for everything, I repeat. If you've got to Stand Round Haf an hour tellin' why a tooth aches after the nerve is dead, charge three Dolders. Puttin' Silver Nitrate on a Tooth orter be a Doler at least. Tellin' how it acts orter be another Doler. Lookin' in your Ledger an' findin' it ain't your Filling that's Come Out orter be Three Dolders. Blame it all, it's the Money Value of the Service performed that makes a man Perfessional, Dock Contour. They ain't no Reel Reason why Dentists should rank below Merchant Tailors an' Dress Makers."

Dock Measley he seemed Offul stirred up. "There's another thing I noticed," says he to the Boss, "that Lady she said to you, 'there ain't only one or two old fillings left in my Front Teeth; the

rest you've put in, Dock Contour.' Now then; is that true?" The Boss spoke up real quick. "No it ain't. She's got seven fillings in her Front Teeth that was done by some Quack Dentist. I never done but one Filling in her Front Teeth, an' my books will show it. "I thought so," said Dock Measley. The Boss looked Surprised again. "I say I thought so, 'cause I know people always think the last dentist that's done anything for 'em is responsible for everything they ever had done to their teeth. It's always his Fillin' that's Come Out, no matter if Fourteen Other dentists has done work for them."

The Boss he looked consumed with admiration. "I don't see how you, a young man that's only been practicin' a Little While, have managed to Ketch On to so many Fundamental Truths about Patients," said he. "Derned if what you say ain't Every Bit true!" "Of course it is," said Dock Measley. "Now what you'd order done when that woman said that about all them Front Fillings bein' yours, was to Fetch Out your Ledger right away, an' show her she was Mistaken. An' you'd order made a Marginal Note like this— 'Mis' Brown claimed all the fillings in her Front Teeth had been done by me, an' I showed her she was Mistaken. An' you'd Order of showed her that Note. Then you wouldn't of had the Bother in store for you now."

"I don't reckon they's any trouble ahead fer me. What do you mean?" said the Boss. "Why, jis' this," said Dock Measley. "I kin see that Woman a-comin' in here about six months from now, an' she'll say, 'Dock Contour, one o' them fillings you put in my Front Teeth some time ago, has come loose. How do you reckon that happened?' Then you'll say right away, 'I never put only one filling in your Front Teeth; all the rest was done by some other dentist, before you came to me.' Then the Lady she'll say, 'Oh, you're certainly mistaken, Dock, you admitted the last time I was here that you'd done all my front fillings over for me.' Then she'll claim that it wasn't done good, an' you'd oughtn't to charge her for doin' it over, an' it'll end in a Row, an' she'll go to some other Dentist, me, likely as not."

Dock Contour he listened reel Respectful to all Dock Measley was a-sayin'. Some Dentists would of been Riled at the Idee of a Young Dentist like Dock Measley tellin' them how to do, but the Boss he ain't got a Speck o' Envy or Jealousy in him, an' he was quite

willin' to learn from Dock Measley, fer he said to me later, he recognized the instink of Genius in him. "He ain't been in the Perfession but Two Years, James, but he shows an uncommon Aptitude for the Business Features o' Dental Practice. I wisht I had his Genius, I do indeed. I'd of been better off, if I'd of had him to Coach me years ago.,'

Well, after awhile it come Lunch Time, an' Dock Measley suggested that they go to a restaurant, an' so I went along with him an' the Boss, havin' a Bill to Collect for the Boss. So as we was a-goin' along the Street, in a Busy Part of the City, a man he bowed to Dock Measley, an' then he motioned towards him with a kind o' Commandin' Gesture, like he'd of Said, "Come 'Ere." So Dock Measley an' the rest of us Stopped, an' the man said, openin' his Mouth, an' throwin' his Head Back, so as Dock Measley could See, says he, "Lookey Here." Then he pointed to his Mouth, an' Dock Measley he Looked, an' the Man said, "It's that Tooth you Filled fer me, las' Week. It's sensitive to Heat an' Cold. What's the matter with your Work?"

So Dock Measley says he, "Sit down here on this Dry-Goods Box an' I'll see." The man he seemed to think it was a Trifle Conspicuous, but he Set Down, an' then Dock Measley he Got Out a big Jumbo mouth mirror, an' he Pried the Man's mouth open about a Foot, an' Busted a Fever Blister, an' the man Yelled, an' says he, 'Never mind, it ain't o' no Consequence.' But Dock Measley said he, "It's of a Good Deal of Consequence; open your mouth, Wide." So the man he Opened his Mouth the best he Could, an' a Crowd was Commencin' to Gather, an' Dock Measley he was gittin' More an' More interested, an' direc'ly he turned to me, like I wasn't only a Stranger, an' says he, "Boy, you go in that Saloon an' ast them to give you a Piece o' Ice." Then he Handed me Five Cents, to pay for the Ice. So I brung it, an' then he rubbed it over the Man's Teeth an' he Ast the Man if it Hurt. An' he said it Didn't, so Offul Mutch. By this time a Big Crowd had collected, an' the Man was showin' Symptoms of bein' Oneasy, 'cause everybody was a-lookin' down his Throat. But Dock Measley he didn't seem to be Satisfied yet, fer he Pried the Man Open again, an' he tapped on his Teeth with a Big Key, an' he prodded round with a Lead-Pencil, an' finally he ast if anyone in the Crowd had such a thing as a Squirt-Gun about their Persons. Nobody didn't seem to have

one, so Dock Measley says he, to the Man, "I can't do you or myself justice here. You'll haf to come to my Offis. I ain't got no Conveniences here. Come any time after Nex' Week. I'm Offul Busy jis' at Present."

Then the Man he looked like he wanted to Scalp Dock Measley, an' says he, "You've made a Mighty Nice Spectacle o' me, ain't you!" An' Dock Measley says he, "I'm Offul Sorry, especially as I've got to charge yon Three Dolers fer this consultation, it bein' out o' Offis Hours." The man he was so Indignant at Dock Measley, that he didn't pay no Attention to what he said about the Pay. But Dock Measley he kep' a-lookin' Turrible Hard at the man's Hip-Pocket, so directly he pulled out his Pocketbook an' he Paid Over the Money. An' says he, "This is the las' Dentistry ever you'll do fer any of Our Family, you chalk that Down! Makin' a Reg'lar Show of me, on the Public Street!" Then Dock Measley says he, "I don't see no Disgrace about reliev'in' Sufferin' on the Public Street. Who begun this, anyhow? Now you'd better Move On; you're liable to be Arrested fer Drawin' sech a Crowd."

Then Dock Measley he winked Sidewise at the Boss, but he never Smiled ner Nothin', no more than a Parrot does when you say, Polly want a Cracker! It was jis' like somebody had pulled a String somewhere inside him, an' he'd Went Off. After he was a Little Way off, said the Boss, "Ain't you afeard you've lost a Patient, Dock?" An' says Dock Measley, "I don't know, An' I don't care. I'll give you that man's address, an' you kin send him your Card, ef you Want to.

FRANK W. SAGE, D.D.S.

Cincinnati, O.

SEPTIC POISONING AND ACCIDENT INSURANCE —Kemper gives his experience with accident insurance companies as regards this disability and goes over the policies of different companies in regard to this point. He thinks the following propositions may be declared: 1. The surgeon who is insured and receives a disabling wound unfitting him for practicing his profession, is entitled to an indemnity whether he contracts septic poisoning or not. 2. A surgeon, while operating, may become infected through an old injury or a new wound. The effects are the same in either instance. There is no valid reason why a policy should not indemnify alike in both cases. 3. If a surgeon can not recover indemnity from an infection received through a sore, or an abrasion, then he gains nothing from a clause or rider attached to his general policy. In other words, the term "septic poisoning" in an accident policy is simply an aid to secure policyholders!—*Phila. Med. Jour.*

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Editorial.

THE STOCKHOLM MEETING AND ITS POSSIBILITIES.

The dentist who has kept track of the history of the profession for the last fifty years finds cause for infinite amazement at the rate of progress, especially during certain intervals. Although some forms of dental work date back to the earliest ages, the history of its organization as a profession, and the methodizing of its practice into a regular system, have all been done within the past sixty years.

The first step in the organization of systematic methods of procedure was taken when the first dental college was organized in America in 1839. So little was embodied in what might be called dental professional work at the time that the whole curriculum could be covered in four or five months. So extraordinary has been the progress since that three terms of seven or eight months each are insufficient to cover the course of instruction in our modern colleges. One can but marvel at what would have been the result had the University of Maryland acceded to Chapin A. Harris' request to appoint on its faculty teachers of dentistry and to incorporate dental procedure as a part of its teachings. He was refused, and that forced the formation of separate dental colleges, with a distinct degree, because medicine refused its own degree to those who had completed only a course of dental study.

If the University of Maryland had accepted Harris' proposition, it is not improbable that dentistry to-day would be what ophthalmology and optics are in their relation to medicine. Dentists under those circumstances would have graduated as medical men first and then added the dental teaching. At the present time ophthalmology is taught as a portion of medicine, and its practitioners hold the "M.D." degree as the qualification, but there is a limited mechanical field in the practice of that specialty, which is filled by the optician, who is not at all a professional man and who holds no degree. The

ophthalmologist writes his prescription for artificial lenses or glasses and the optician fills it.

This is essentially the position occupied by dentistry in Europe. The Zahnarzt in Germany is a medical man who, theoretically at least, practices nothing except the medical branches. If there is mechanical work to be done he employs or directs the employment of a Zahntechniker, who does mechanical work for the Zahnarzt, as the optician does it in this country for the ophthalmologist. It is true that the Zahnarzt fills teeth, which is mechanical, but this has been adopted as a part of surgical practice, and the filling of teeth is considered a portion of surgical procedure, and as such is practiced by the Zahnarzt.

Dentistry, however, includes much more of mechanics than does ophthalmology, and prosthetic dentistry is considerably more an integral part of dentistry than is the fitting of artificial lenses a part of ophthalmology. Modern dentistry has added the construction of obturators, of regulating appliances, the making of crowns and bridges, porcelain work, and other prosthetic appliances, to say nothing of the operative department, which is essentially prosthetic, and thus a large and essential proportion of the practice of dentistry may be included in prosthesis.

The systems of professional instruction in Europe and in America vary widely. In the former country nothing can be incorporated in the college curriculum except that which is medical. As medicine teaches no constructive methods it necessarily follows that, theoretically at least, all the various branches of prosthesis are outside the curriculum of study of the qualified dentist. In America, with the founding of separate schools, all the practice of dentistry was incorporated in the curriculum, and our colleges now teach every branch of practice, whether it be medical or constructive. The two systems are widely at variance, and neither can under present circumstances recognize the other. The European schools decline to approve the American curriculum because it is not strictly medical. The American schools cannot accept the European curriculum because it covers and gives instruction in only a portion of that which is here accepted as dental practice, the prosthetic work being entrusted to an irresponsible and often unqualified practitioner, to whom the dental student must be bound by a sort of apprenticeship.

Here exist discrepancies and differences which absolutely forbid

the recognition of the curriculum of one country by that of another. The profession of dentistry in our country may be a far different thing from that in another. European graduates desiring to take an American course of study are by our regulations found very deficient, inasmuch as they have probably received no acceptable instruction in that which forms the greater part of the American practice of dentistry. European laws refuse to acknowledge our diplomas because they are not medical and because they represent a curriculum of college study which is so much broader than that of Europe.

Medical practice and dental practice should be the same the world over. Science knows no boundary laws, and should not be restricted by seas or rivers or artificial lines. The present tendency is toward a harmonization of these seemingly almost irreconcilable differences. Each of the systems presents certain advantages and certain imperfections. If that of Europe is insufficient, its curriculum at least is carefully guarded. Professional study is conducted in old established institutions, or in those that have affiliations with such. The schools usually have endowments, or receive state aid, which makes them quite independent of the fees received from students. They have state supervision, which forbids the lowering of the standard. Teachers are paid regular salaries. This at first seems highly to be desired in all cases, but it should be remembered that it has a tendency to segregate instructors from the profession and from professional feeling. Their sympathies are not so complete when under salary as when they are obliged to keep in close affiliation with the profession if they would reach any degree of success.

In America, on the other hand, the first organized dental colleges were segregated from the medical schools and universities, dependent entirely upon the fees of students, and hence were in a sense speculative institutions. So long as they were conducted by men of high aspirations and ideals this did not so much matter, but in due process of time some of them fell under the conduct of those who possibly might be selfish, and who desired to graduate the greatest number of students for the sake of the fees involved. This is the weakness of the American school, but of late the colleges here have begun to affiliate with universities and are under their control. While they are not endowed institutions, and in some cases are in a measure dependent upon the fees of the students for the remuneration of the teachers, their university affiliation is a check upon any

undue selfishness or unprofessional conduct on the part of their governors.

The tendency of the early schools in some instances to become mere commercial enterprises, they being under no restraint of law or of university affiliation, resulted in a depreciation of the educational standard in this country. Especially was this manifest in the reception of foreign students, who, it has been charged, were received into the senior classes and graduated at the end of a very few months, sometimes almost without any preliminary qualifications whatever. Abuses of the college privileges by unworthy men finally resulted in the formation of the National Association of Dental Faculties, which has wrought some of the most surprising changes that have ever been brought about, even in dentistry. The standard has been steadily raised, recalcitrant schools disciplined, and with the aid of the state laws and the state boards of dental examiners, all the present recognized schools are maintaining a standard which, if not now as high as it should be, bids fair within a short time to reach the highest standard of excellence. But the diplomas of these schools are not now accepted in Europe, nor are European licenses for practice recognized in this country as the equivalent for the completion of our courses of study.

Two years ago an international dental congress was held in Paris, at which these things were considered and a permanent educational section was established, which held its first meeting last summer in Cambridge, England. There were representatives from seventeen nations present, taking part in the deliberations and proceedings. Very little could be then done, as it was really only a preliminary meeting, but provisions were made for holding another meeting this summer, which should be made up of representatives from every nation having a legal dental system of education.

It is probable that the meeting will have a greater influence upon the dentistry of the future than any ever yet held. It is called at Stockholm, Sweden, for August 12 next. As it is comparatively new, few American dentists or American teachers have comprehended its scope or its possibilities. That there might be a large delegation from America it became necessary to change, if possible, the time of the Niagara meetings, as the success of the Stockholm gathering would be seriously jeopardized unless it could be held early in August. The effort to secure this change resulted in some

misunderstandings. It was believed by a part of the profession that a few dentists who wished a pleasure jaunt abroad desired to inconvenience all the rest of the profession. Others received the impression that representatives of a few schools were laboring to obtain some special privileges or recognition in Europe, from which the others should be excluded, and that it was not for the interests of the schools generally that these selfish purposes should be ministered to by changing the date. Better counsels finally prevailed, however, and the whole matter has been harmonized so that no one will be inconvenienced.

So far as we can learn, the Stockholm meeting means a federation of the educational interests of all countries, and as far as possible the adoption of a uniform standard of instruction which shall be recognizable in all the countries, so that a student of one nation going to the school of another may obtain due credit for the instruction which he has already received. This means the unification of dentistry, the elevation of it to a higher plane, and the advancement of the interests of the schools of all nations. There can be no selfish end gained by any school which desires to maintain a high standard, because none under such a system can by any possibility be excluded from the benefits which all may derive, provided only that it is a properly equipped and conducted school.

The meeting means the drawing of a line which shall distinguish our American schools, the members of the National Association of Dental Faculties, from the unrecognized and fraudulent schools which have been organized here—always, so far as we are aware, by foreigners. It means a dental faculties' association which shall embrace the whole world. Such an organization could not possibly exclude any competent school, for it could not be conducted according to the exclusive laws of any one nation. We believe that the best interests of dentistry, and especially of American dentistry, demand that a large delegation shall attend the Stockholm meeting. Every school which is a member of the Faculties' Association should be represented. If it cannot send a member of its own faculty, it should delegate some one else in whom it has confidence to act for it.

It is not to be expected that all the benefits to be derived from such a federation shall be obtained in one year, any more than the good work of the N. A. D. F. has been confined to a single session,

but it will inaugurate an era of fellowship and set in motion a train of events which ought to result in infinite good to dentistry everywhere. Of course none of its legislation could be accepted in America until it had been ratified by the Faculties' Association, but certainly its possibilities are almost without limit. There should and probably will be a thorough consideration of all these matters at the coming Niagara meetings. A fair understanding as to what is desired to be accomplished, and what shall be advocated by American representatives, should be decided upon at that time. Those who attend the Stockholm meeting will then know upon what they can depend. It is undoubtedly the case that some concessions must be made by all concerned if any standard acceptable to all countries shall be adopted. It is not, however, at all probable that anything positive or definite will be decided this summer, but it is certain that at least an agitation will be inaugurated which shall result in a better understanding of the various systems of dental education by the profession in all countries. W. C. B.

ARMY AND NAVAL DENTAL BILLS.

Our readers are undoubtedly aware that for some time past strong efforts have been made to obtain the passage of a bill to provide dentists for the Navy. The first bill stipulated that the appointees be commissioned, just as are those in the medical corps, and this demand caused considerable delay. First, because some of those in authority thought that the dental corps should not be of equal rank with the medical department; and second, because others claimed that the dentists in the Navy should have no better standing than those in the Army.

Dr. Wms. Donnally of Washington, who secured the passage of the bill providing dentists for the Army some time ago, has been the leading spirit in this matter of the Navy dental bill. When he discovered the obstacles in the path of same he directed his efforts towards inducing the Surgeon General of the Army to recommend a commissioned corps of dental surgeons for the Army, as he had promised to do some two years before. Sternberg agreed to this, and as the Surgeon General of the Navy had promised to act in accord with the Army Surgeon General, the time was ripe for the two bills—one reorganizing the Army dental corps and making it a

commissioned body and the other adding a commissioned corps of dental surgeons to the Navy.

On April 25, 1902, Senator Pettus offered in the Senate bill No. 5420 for the Army and bill No. 5419 for the Navy, and duplicates of these two bills were offered in the House of Representatives by Mr. Brownlow of Tennessee on April 25 for the Army and by Mr. Joy of Missouri for the Navy on April 24. The four bills were referred respectively to the Committee on Military Affairs and to the Committee on Naval Affairs at once. Thus far the committees have not passed on same, but there seems to be little room for doubt that both bills will become laws without trouble or delay. We reproduce the two bills herewith:

S. 5420. A bill to reorganize the corps of dental surgeons attached to the Medical Department of the Army.—*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That to the Medical Department of the Army there shall be attached a corps of dental surgeons, which corps shall not exceed in number the actual requirements nor the proportion of one to one thousand authorized by law for service in the Regular Army.

The said dental corps shall consist of three grades, designated assistant dental surgeon, passed assistant dental surgeon, and dental surgeon, and with respect to rank, pay, and allowances and to promotions within said dental corps, the grades named shall correspond to the grades of the medical corps designated assistant surgeon, passed assistant surgeon, and surgeon, respectively.

Sec. 2. That original appointments shall be made to the grade of assistant dental surgeon, and the appointees must be citizens of the United States between twenty-two and twenty-nine years of age, graduates of standard dental colleges, of good moral character, of unquestionable professional repute, and shall be required to pass the usual physical examination and a professional examination which shall include tests of skill and proficiency in practical dentistry and the usual subjects of a standard dental course: Provided, That contract dental surgeons attached to the Medical Department of the Army at the time of the passage of this Act may be appointed, three of them to the grade of passed assistant dental surgeon and the others to the grade of assistant dental surgeon.

S. 5419. A bill to add a corps of dental surgeons to the Bureau of Medicine and Surgery of the Navy.—*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That to the Bureau of Medicine and Surgery of the Navy there shall be attached a corps of dental surgeons, which corps shall not exceed in number the actual requirements

nor the proportion of one to one thousand authorized by law for the naval and marine military service and training schools.

The said dental corps shall consist of three grades, designated assistant dental surgeon, passed assistant dental surgeon, and dental surgeon, and with respect to rank, pay, and allowances and to promotion within said dental corps, the grades named shall correspond to the grades of the Medical Corps, designated assistant surgeon, passed assistant surgeon, and surgeon, respectively.

Sec. 2. That original appointments shall be made to the grade of assistant dental surgeon, and the appointees must be citizens of the United States between twenty-one and thirty years of age, graduates of standard dental colleges, of good moral character, of unquestionable professional repute, and shall be required to pass the usual physical examination and a professional examination, which shall include tests of skill and proficiency in practical dentistry and the usual subjects of a standard dental course: Provided, That there shall be first selected a member of the dental profession who is a citizen of the United States and a graduate of a standard dental college and whose aptitude and experience evidence eminent fitness for conducting the professional examinations and for assisting in organizing, equipping, and supervising the operations of the others, who shall be first appointed to the grade of dental surgeon: Provided further, That the dentist now employed at the Naval Academy shall not be displaced by the operation of this Act.

Notices.

ARKANSAS STATE DENTAL ASSOCIATION.

The Arkansas State Dental Association met at Little Rock May 12-14, 1902, and elected the following officers: Pres., Chas. Richardson; 1st V.-P., A. L. Pendergrass; 2nd V.-P., R. W. Quarles; Secy.-Treas., T. W. Rowland.

NORTHERN OHIO DENTAL ASSOCIATION.

The forty-third annual meeting of the Northern Ohio Dental Association will be held at Cleveland June 9-11, 1902. The profession is cordially invited to be present.

W. T. JACKMAN, Cor. Sec'y, Cleveland.

NEW ENGLAND ASSOCIATION OF DENTAL EXAMINERS.

This Association assembled for its sixth annual meeting and banquet at Hotel Brunswick, Boston, Tuesday evening, April 22, 1902. The discussions after dinner were on "Methods of Conducting Examinations," and "Enforcement of the Dental Laws." There was a good attendance from the different state boards and of honorary members who were formerly on the state boards. Drs. William Carr and William Jarvie of the New York board, and Dr. Chas. A. Meeker of the New Jersey board, were guests of the Associa-

tion. The following officers were elected: Pres., D. W. Fellows, Portland, Me.; V.-P., P. J. Heffern, Pawtucket, R. I.; Recorder, Geo. A. Maxfield, Holyoke, Mass.; Chairman Ex. Com., John F. Dowsley.

Geo. A. MAXFIELD, Recorder.

IOWA STATE DENTAL SOCIETY.

This Society held its annual meeting at Des Moines, May 6-8, 1902, and elected the following officers: Pres., R. S. Bandy; V.-P., Wm. Fynn; Sec'y, W. R. Clack; Treas., T. A. Gormley. The next annual meeting will be held at Sioux City.

OKLAHOMA STATE DENTAL ASSOCIATION.

This Association held its annual meeting at Guthrie, May 6-7, 1902, and elected the following officers for the ensuing year: Pres., J. A. Wells; V.-P., C. H. Stalford; Sec'y and Treas., W. L. Pembleton. The next meeting will be held in Oklahoma City.

LOUISIANA STATE DENTAL SOCIETY.

The annual meeting of this Society was held at New Orleans, May 7-8, 1902, and the following officers were elected: Pres., M. R. Fisher; 1st V.-P., P. J. Friedrichs; 2d V.-P., W. Wood; Rec. Sec'y, H. P. Magruder; Cor. Sec'y, A. L. Plow; Treas., C. Mermilloid, Sr.

WISCONSIN STATE DENTAL SOCIETY.

The thirty-second annual meeting of the Wisconsin State Dental Society will be held at Milwaukee, July 15-17, 1902. A cordial invitation is extended to all members of the profession to be present.

W. H. MUELLER, Sec'y, Madison.

NATIONAL DENTAL ASSOCIATION.

In accordance with the result of the recent postal card vote, the date of the coming meeting of the National Dental Association will be changed from the first Tuesday of August to Monday, July 28, and will continue four days.

A. H. PECK, Rec. Sec'y, Chicago.

HARVARD DENTAL ALUMNI ASSOCIATION.

The place of meeting of the Harvard Dental Alumni Association for the thirty-first annual banquet, Monday evening, June 23, 1902, has been changed from Young's Hotel, Boston, to the Harvard Union, Cambridge, Mass.

WALDO E. BOARDMAN, Sec'y, Boston.

MARYLAND STATE DENTAL ASSOCIATION AND DISTRICT OF COLUMBIA DENTAL SOCIETY.

The sixth annual union meeting of the Maryland State Dental Association and the District of Columbia Dental Society will be held in Washington, D. C., June 6-7, 1902.

M. F. FINLEY, Chairman Pub. Com.

NATIONAL DENTAL ASSOCIATION—SECTION IV.

Those who will present papers upon the subjects of Etiology, Physiology, Hygiene, Prophylaxis and Electricity will kindly communicate with the chairman of the section, Dr. J. D. Patterson, Kansas City, Mo., or

EMMA EAMES CHASE, Secy., 3384 Wash. Ave., St. Louis.

FLORIDA STATE BOARD OF DENTAL EXAMINERS.

The annual meeting of this board for the examination of applicants to practice dentistry in Florida will be held at Daytona, May 27, 1902. Any information concerning the examination will be given by

F. B. HANNAH, Secy., Umatilla.

NEW JERSEY STATE BOARD OF REGISTRATION AND EXAMINATION IN DENTISTRY.

This Board will hold its next examination July 7-9, 1902, at the office of the secretary, J. Allen Osmun, 588 Broad St., Newark. All applicants must have their applications in two weeks prior to the examination.

J. ALLEN OSMUN, Sec'y.

VIRGINIA STATE DENTAL ASSOCIATION.

The Virginia State Dental Association will hold its annual meeting at Old Point Comfort, Aug. 5-7, 1902. All dentists in good standing are cordially invited to take this as the time for their summer outing, and to spend it with us at a place which is boundless in its resources for recreation.

GEO. F. KEESEE, Sec'y, Richmond.

NORTH CAROLINA STATE BOARD OF DENTAL EXAMINERS.

The regular annual meeting of this Board will be held at Raleigh, June 16-18, 1902, for the examination of applicants for license to practice dentistry in that state. Practical demonstrations will be required, applicants furnishing their own instruments and material for operating.

R. H. JONES, Sec'y, Winston-Salem, N. C.

KANSAS STATE DENTAL ASSOCIATION.

The annual meeting of this Association was held at Hutchinson, May 8-10, 1902, and the following officers were elected for the ensuing year: Pres., W. A. Coston; 1st V.-P., T. I. Hatfield; 2d V.-P., J. W. O'Bryan; Sec'y, G. A. Easterly; Treas., G. F. Austrose; Supt. of Clinics, S. J. Renz; Mem. Board of Censors, W. A. McCarter. The next meeting will be held at Emporia.

GEORGIA STATE BOARD OF DENTAL EXAMINERS.

This board will hold its regular annual meeting June 10, 1902, in Macon, for the purpose of examining applicants for license to practice dentistry and for such other business as may come before it. All applicants will be required to exhibit their diplomas for record and examination before their names will be enlisted.

D. D. ATKINSON, Secy., Brunswick.

SOUTH DAKOTA STATE DENTAL SOCIETY.

The South Dakota State Dental Society will meet at Watertown, July 8-10, 1902. Porcelain work with gasoline furnaces will be one of the features of entertainment, and orthodontia will receive special attention. Clinics by leading dentists in gold and amalgam fillings will be given. The profession is cordially invited to attend.

G. W. COLLINS, Sec'y, Vermillion.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The nineteenth annual meeting of the National Association of Dental Faculties will convene in the ball-room of the International Hotel, Niagara Falls, N. Y., July 24, 1902. The executive committee will meet at 11 a. m., July 23. All colleges are respectfully referred to rule requiring that their annual announcement be in the hands of the executive committee at this meeting.

S. W. FOSTER, Sec'y Ex. Com., Atlanta, Ga.

CHICAGO DENTAL SOCIETY.

At the annual meeting of this Society, April 1, 1902, the following officers were elected for the ensuing year: Pres., E. MaWhinney; 1st V.-P., H. J. Goslee; 2d V.-P., F. B. Noyes; Sec'y, W. Girling; Cor. Sec'y, C. S. Bigelow; Treas., E. R. Carpenter; Librarian, H. W. Sale; Mem. Board of Directors, Edmund Noyes; Board of Censors, W. V-B. Ames, Chairman, C. N. Johnson, A. W. Harlan.

C. S. BIGELOW, Cor. Sec'y.

VERMONT STATE BOARD OF DENTAL EXAMINERS.

A meeting of the Vermont State Board of Dental Examiners will be held at the Pavilion Hotel, Montpelier, July 9, 1902, at 2 p. m. for examination of candidates to practice dentistry. Examination will be in writing, and will include Anatomy, Physiology, Bacteriology, Chemistry, Metallurgy, Pathology, Therapeutics, Surgery, Materia Medica, Anesthesia, Operative and Prosthetic Dentistry, and an operation in the mouth. Candidates must come prepared with instruments, rubber dam and gold. Applications, together with the fee of \$10, must be filed with the Secretary on or before July 1.

GEO. F. CHENEY, Secy. St. Johnsbury.

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next meeting of this Board for the examination of candidates will be held at Watertown, July 8-10, 1902. No applicant will be admitted unless he presents satisfactory evidence of having been in the active practice of dentistry continuously for at least three years immediately preceding the date of examination, or that he is a graduate from a reputable dental college. All applicants must bring operating outfits, dental engine and materials, prepared to do bridgework or fillings of all kinds. Applications must be made in writing to the secretary at least one week previous to the date of examination. Candidates must present themselves at 9 a. m., July 8, 1902, at Dr. C. W. Stutenroth's office. None will be received later.

G. W. COLLINS, Sec'y, Vermillion.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The nineteenth annual session will convene at the International Hotel, Niagara Falls, N. Y., July 25, 1902, at 10 a. m. and will continue in session until the adjournment. It is earnestly hoped that this meeting will see a larger representation than any heretofore held. Each state is asked to make provision now to send delegates. Niagara Falls is an ideal meeting place, and the International Hotel is the best; its service and appointments are first-class in every respect. Rates will be from \$3.50 to \$4.50 per day, according to location of room, being a reduction of 50 cents per day from the regular rates. It is expected that the usual reduction in railroad fare will be arranged in time. Further notice will be given later.

J. ALLEN OSMUN, Secy., Newark, N. J.

ILLINOIS STATE DENTAL SOCIETY.

At the annual meeting of this Society, held at Springfield May 13-15, 1902, the following officers were elected for the ensuing year: Pres., A. H. Peck, Chicago; V.-P., W. E. Holland, Jerseyville; Sec'y, H. J. Goslee, Chicago; Treas., C. N. Johnson, Chicago; Librarian, J. T. Cummins, Metropolis; Com. Science and Literature, G. V. Black, Chicago; Com. Art and Invention, L. S. Tenney, Chicago; Board of Examiners, C. B. Sawyer, Jacksonville; Com. on Ethics, E. A. Royce, Chicago, G. E. Warren, Pontiac, E. F. Hazell, Springfield; Supervisor of Clinics, C. P. Pruyn, Chicago; Mem. of Ex. Council, E. K. Blair, Waverly, D. M. Gallie, Chicago, O. M. Daymude, Monmouth; Pub. Com., H. J. Goslee, Chairman, Chicago, D. M. Cattell, Chicago, G. W. Dittmar, Chicago; Local Com. of Arrangements, F. H. McIntosh, J. B. Brown, G. D. Sitherwood, all of Bloomington. Bloomington was selected as the place for the next meeting.

LATEST DENTAL PATENTS.

- 695,625. Crown soldering pliers, F. E. Roach, Chicago.
- 695,796. Artificial denture, A. F. Cogswell, Crete, Neb.
- 696,120. Dental gauge, C. R. Vanderpool, Grand Rapids, Mich.
- 696,155. Guard attachment for engines. I. N. Williams, Sullivan, Ind.
- 696,545. Engine wall bracket, A. W. Browne, Princebay, N. Y.
- 696,652. Dental obtunder, A. F. Merriman, Jr., Oakland, Cal.
- 696,713. Dental lathe, J. J. Brown, Macon, Mo.
- 696,774. Articulator, J. Tiffin, C. E. Bentley, Pinos Altos, N. M.
- 696,772. Crown-slitting tool, G. W. Teufel, Philadelphia.
- 697,326. Dental appliance, G. H. Claude, Annapolis, Md.
- 697,983. Artificial denture, S. H. B. Cochrane, Canal Winchester, O.
- 698,280. Matrix band retainer, A. J. Hiniker, San Francisco, Cal.
- 698,964. Articulator, M. M. Kerr, Detroit, Mich.
- 698,997. Amalgam carrier, J. W. McConnell, Cornelia, Ga.
- 699,653. Vulcanizer, J. S. Campbell, London, Eng.
- 699,776. Impression tray, E. L. Townsend, Los Angeles, Cal.
- 700,160. Dental mallet, J. W. Thatcher, San Francisco, Cal.

AMERICAN DENTAL SOCIETY OF EUROPE.

The next meeting of this Society will be held in Stockholm, Sweden, Aug. 12-15, 1903. A cordial invitation is extended to the profession to meet with us. This date will enable those attending the National Dental Association meeting at Niagara to be present by sailing via Hamburg after that meeting. With a view of facilitating matters for those who purpose attending, I would say, that owing to the heavy booking of steamer berths it would be well for visitors to secure their return passages in advance. The best way to reach Stockholm is via Hamburg. (1) travel tickets only for the journey—Hamburg, Kiel, Corsor, Copenhagen, Malm, Stockholm, return to Hamburg by the same route, \$33 each adult, first-class; \$26 each adult, second-class. (2) travel tickets only for the route—Hamburg, Subeck, and steamer direct for Stockholm, returning to Hamburg by the same route, \$20 each adult first-class; \$15 each adult second-class. In the case of route No. 1 the validity is 45 days, and for route No. 2 the season. As much notice as possible should be given to secure accommodations. The time between Hamburg and Stockholm is as follows—Route No. 1: Leave Hamburg 8:53 a. m. or 11:07 p. m., arrive Copenhagen 6:54 p. m. or 10:05 a. m., leave Copenhagen 7:45 p. m. or 11:15 a. m., arrive Stockholm 11:25 a. m. or 6:45 a. m. Route No. 2: Leave Hamburg noon, 2 p. m. or 3:40 p. m., arrive Subeck 1:21 p. m., 3:32 p. m. 4:53 p. m., leave Subeck about 6:15 p. m., Wednesdays and Saturdays, the trip taking about 42 hours, but the time for the coming season is not yet fixed. Any further information can be obtained from Messrs. Cook & Sons, 261 Broadway, New York City.

L. J. MITCHELL,

Hon. Sec., 39 Upper Brook St., London, W. Eng.

NEW JERSEY STATE DENTAL SOCIETY.

In no one profession have there been so many kaleidoscopic changes in methods as in modern dentistry. The practice of to-day is succeeded on the morrow by an improved method. The mechanician, the electrician, the chemist, the microscopist, the histologist, the physician, the biologist, and the specialist of many phases, and the realms of materia medica, are all called upon to contribute to the avaricious maw of the present-day dentist.

The day has passed when the man can sit in his office, and read in a desultory way one dental journal, never visit a dental society, and call himself a dentist. The excellence of the professional man is due mostly to the stimulus of the societies. The more meetings he attends the better dentist he is. He must be up and doing and lead a strenuous life—the old order has passed away and the new is on. Show me a community where the societies are progressive and well attended, and the result is more men respected professionally and socially, all other things being equal.

A state dental meeting nowadays must be a post-graduate course in dentistry, and in the thirty odd years of its existence the New Jersey State Dental Society has tried to live up to the fact as an argument in dental education and evolution. With this argument emphasized, we ask you, the great body of ethical and progressive men in Jersey and adjacent states, to

cut off from your calendar July 16-18, and come to our meeting and let us give you ocular proof of the object lesson we will present in the wonderful exhibit of 1902. Up to-date electrical appliances, inlay furnaces, chairs, spittoons, improvements in gold and base metals for operative and mechanical work, new and ingenious instruments for the office and laboratory, porcelain teeth and crowns, and last of all, many clinics performed before you by eminent operators, that are of more value than a 12mo essay of descriptions.

Asbury Park is a pleasant place to visit. The railroad fares are reasonable, the hotel rates are moderate, the scenery is beautiful and the social element is all that can be desired. We will try and make your visit pleasant and profitable, and the accomplished members of the entertainment committee will assuage your thirst like an oasis in the desert. Last year seven hundred dentists registered an attendance; this year we look for an even thousand.

The Columbia will be the headquarters from which the Hornet's flag will fly. Proprietor J. H. Jones will try his best to accommodate all who favor him with the request in a reasonable time, with the rate of \$2.50 and \$3.00 per day.

The auditorium, the largest building on the Jersey coast, will be used in its entirety for the exhibits and meetings.

Again we ask you to cut the time off now and meet with us.

CHAS. A. MEEKER, D.D.S., Sec'y.

H. S. SUTPHEN, D.D.S., Ass't Sec'y.

News Summary.

B. F. WRIGHT, 73 years old, a dentist at Camillus, N. Y., died April 9, 1902.

D. D. SMITH, 85 years old, a dentist at Syracuse, N. Y., died April 23, 1902.

CLARENCE BETCHER, 28 years old, a dentist at Red Wing, Minn., died April 30, 1902.

J. C. JONES, 81 years of age, a dentist at Webb City, Mo., died from paralysis April 26, 1902.

A. N. LAIRD, for many years a dentist at Muncy, Pa., died of neuralgia of the heart April 8, 1902.

A. M. KELSEY, 76 years old, and for many years a dentist at Rockford, Ill., died April 12, 1902.

J. C. SNELLING, 26 years old, a dentist at Elsie, Mich., died April 14, 1902, after a few days illness.

I. N. RUSSELL, 68 years old, a dentist at Waterbury, Conn., died April 12, 1902, after a long illness.

HENRY M. MILLER, 76 years old, a dentist at Westfield, Mass., died after a short illness April 9, 1902.

MARK VANCE, a dentist at Ottumwa, Ia., was found guilty of lewdness April 27, 1902, by a jury in that city.

F. L. GORGAS, 40 years of age, a dentist at Altoona, Pa., died April 24, 1902, from injuries sustained by a fall.

EDWARD EBI, 65 years of age, and the oldest dentist in Cedar Rapids, Ia., died suddenly of pneumonia May 12, 1902.

WILLIAM SELBACH, a dentist at Springfield, O., was adjudged insane and committed to the state hospital last month.

H. L. BANZHAF, of Manitowoc, Wis., has accepted the deanship of the dental department of the Milwaukee Medical College.

STILL IN DANGER.—Friend: "And are you out of danger?" Invalid: "Not yet. The doctor says he'll pay me two or three more visits"—*Ex.*

O. D. MUNSON, 90 years old, formerly a dentist in Auburn, N. Y., died suddenly May 12, 1902. He was one of the '49ers in the California gold fields.

COLUMBUS (O.) DENTAL SOCIETY at its April meeting elected the following officers: Pres., W. L. Gares; V.-P., H. M. Seamans; Sec'y, E. C. Sherman; Treas., E. M. Fisher.

BENJAMIN LORD, 83 years of age, a dentist in active practice in New York City for more than half a century, died May 3, 1902, as the result of injuries sustained from a fall.

POKER VERSUS DENTISTRY.—It has been suggested that the reason why some dentists are good poker players is because they are skilled in the arts of drawing and filling.

BRAIN WARMEST PART OF BODY.—Mosso has determined as the results of a series of experiments that the brain is the warmest part of the body.—*Canadian Practitioner.*

BANKRUPT.—DeV. Bowen, a dentist at Muncie, Ind.; liabilities, \$1,495, assets, \$400. G. H. Kriechbaum, a dentist at Los Angeles, Cal., debts, \$4,981.86, assets, \$1,750.

ALTERNATIVE.—Spinster Aunty: "O, doctor, what are we to do for Mary? Every time she sits down to eat that tooth hurts her." Doctor Practical Grumm: "Have her stand up."

DETROIT (MICH.) DENTAL SOCIETY held its annual meeting May 5, 1902, and elected the following officers: Pres., L. N. Hogarth; V.-P., D. C. Martin; Sec'y, W. H. Martmer; Treas., C. P. Wood.

JACKSON (MICH.) DENTAL SOCIETY held its regular monthly meeting May 12, 1902, and elected the following officers: Pres., F. Winchester; V.-P., J. W. Lyons; Sec'y and Treas., C. B. Blackmarr.

MISSOURI DENTAL COLLEGE ALUMNI ASSOCIATION held its annual banquet, April 23, 1902, and elected the following officers: Pres., DeCourcey Lindsley; V.-P., O. J. Fruth; Treas., C. E. Schumacher; Sec'y, H. Cassell.

STRONG TESTIMONIAL.—Your medicine has helped me wonderfully," she wrote to the patent medicine house. "Three weeks ago I could not spank the baby, and now I am able to thrash my husband. God bless you."—*Smart Set.*

CHLOROFORM AS A STYPTIC.—Excellent results have been obtained from a mixture of 1 part chloroform with 50 parts water, in rapidly arresting hemorrhage after tooth extraction.—Dr. Spaak, in *Jour. Med. Paris*.

SMALL POX CATCHES FAKIR.—Richmond, S. D., is having lots of fun. A "German Medicine Company" struck town, sold tubsful of dope, pulled hatsful of teeth, and then the "doctor" took down with small pox.

SUNDAY DENTISTRY BARRED IN BOSTON.—Boston is having the "Blue Laws" with a vengeance, and last month dentists and photographers were added to the list of those who must do no work whatever on Sunday.

LAKE ERIE DENTAL ASSOCIATION held its thirty-ninth annual meeting at Cambridge Springs, Pa., May 6-8, 1902, and elected the following officers: Pres., C. T. Felt; V.-P., W. C. Dunn; Sec'y, C. D. Elliott; Treas., J. H. Heivly.

DOUBTFUL.—"Is your husband suffering from the toothache?" "Well," answered the woman with a tired expression, "He says he is suffering, but from the way he keeps bragging about it I am rather suspicious that he is enjoying it."

C. M. RICHMOND, 57 years old, and one of the best known dentists in New York City, died of pneumonia May 13, 1902, at Clarksville, Va., where he went six weeks ago to recover his health. He was the inventor of various forms of crown and bridge work.

ENGLISH AS SHE IS SPOKE.—"Wossatchoogot?" "Afnoonkicker. Lassion." "Lemmeseut." "Taykut. Nuthninnet." "H'm! Paypsezzrain." "Yeh. Icanalltellwenrainscummin'. Canchoo?" "Naw. How?" "Bone-zake." "'Squeer!"—*Chicago Tribune*.

VALLEY DISTRICT DENTAL SOCIETY OF MASSACHUSETTS held its annual meeting and banquet at Springfield, April 21, 1902, and elected the following officers: Sec'y, E. T. Dickinson; Treas., C. S. Hurlbut, Jr. Ex. Com., A. J. Flanagan, D. H. Allis, H. C. Medcraft.

SOUTHERN MINNESOTA DENTAL ASSOCIATION held its annual meeting April 15-16, 1902, and elected the following officers: Pres., A. C. Searle; V.-P., J. W. S. Gallagher; Sec'y, A. C. Rosenquist; Treas., M. B. Wood. The next annual meeting will be held at Mankato.

HARRIS DENTAL ASSOCIATION held its thirty-fifth annual meeting at Lancaster, Pa., May 7, 1902, and elected the following officers: Pres., D. S. Smith; V.-P., H. K. Baer; Sec'y, B. F. Witmer; Treas., W. H. Trout. Ex. Com., H. D. Knight, B. F. Witmer, W. H. Lowell.

WORST RESERVED FOR THE LAST.—"My dear fellow," said the dentist, "this doesn't hurt. It's not nearly as painful as it will be." "True," assented the howling subject, remembering that the bill was yet to be paid; and then he submitted with becoming meekness.—*Baltimore News*.

FOURTH DISTRICT DENTAL SOCIETY OF NEW YORK STATE held its annual meeting at Glens Falls, April 15, 1902, and elected the following officers: Pres., G. Brown; V.-P., L. A. Timerman; Treas., E. Doolittle; Sec'y, E. B.

Rhinehart; Correspondent, J. Barraclough. The next semi-annual meeting will be held in Schenectady and the next annual meeting in Glens Falls.

SIXTH DISTRICT DENTAL SOCIETY OF NEW YORK STATE held its thirty-fourth annual meeting at Binghamton, May 8-9, 1902 and elected the following officers: Pres., F. M. Willis; V.-P., A. V. Needham; Sec'y, F. W. McCall; Treas., H. D. Whitmarsh; Censor, F. B. Darby.

EIGHTH DISTRICT DENTAL SOCIETY OF NEW YORK STATE held its annual meeting at Buffalo, April 29, 1902, and elected the following officers: Pres., G. B. Scott; V.-P., W. J. Leak; Rec. Sec'y, B. W. Whipple; Cor. Sec'y, G. W. Pringle; Treas., L. Meisberger; Librarian, S. A. Freeman.

PHILADELPHIA DENTAL COLLEGE ALUMNI ASSOCIATION held its annual meeting at Philadelphia May 1, 1902, and elected the following officers: Pres., F. M. Smith; V.-P., C. H. Chase; Rec. Sec'y, A. E. Irwin; Cor. Sec'y, M. Greenbaum. Directors, S. P. Luckie, H. Iredell, Henry McManus.

AGRICULTURE.—"Where did all these skeletons come from?" asked the visitor at the medical college. "Can you keep a secret?" queried the medical student. "Sure thing," replied the visitor. "Then I'll tell you," said the embryo M. D. and continued in a loud whisper, "We raised them."

SOUTHERN WISCONSIN DENTAL ASSOCIATION at its annual meeting at Janesville, May 15-16, 1902, elected the following officers: Pres., C. S. Bradley; 1st V.-P., H. F. Dean; 2nd V.-P., J. P. Baker; Sec'y, C. W. Culver; Treas., W. G. Hales. The next annual meeting will be held at Janesville.

THIRD DISTRICT DENTAL SOCIETY OF NEW YORK STATE held its thirty-fourth annual meeting at Albany, April 15, 1902, and elected the following officers: Pres., F. W. Ketner; V.-P., M. J. Barrett; Sec'y, C. E. Allen; Treas., J. W. Canaday. Ex. Com., G. A. Sullivan, J. W. Hine, C. H. Bird.

MAHONING VALLEY DENTAL ASSOCIATION held its semi-annual meeting at Youngstown, O., April 15, 1902, and elected the following officers: Pres., F. S. Whitslar; 1st V.-P., D. Gibbons, 2d V.-P., N. B. Acheson; Sec'y, G. B. Speer; Treas., H. E. Dunn. The next meeting will be held at Sharon, Oct. 20.

MILWAUKEE DENTISTS ORGANIZE.—The dentists of Milwaukee are forming an organization to protect themselves against dead beats. We wish them all possible success, but although several moves of this kind have been made in various parts of the country, we have never heard of one which was successful.

LEUCOPLAKIA.—J. V. Shoemaker gives the clinical histories of two cases and a general description of the disease. It calls for a differential diagnosis from syphilis, tuberculosis, epithelioma, chronic glossitis, and opaline patches. Shoemaker advises a cautious local therapy and the avoidance of escharotic measures.—*N. Y. Med. Jour.*

DAMAGE SUITS.—A dentist at Horseheads, N. Y., has been sued for \$2,000 damages by a woman who claims that he gave her an overdose of cocaine for the purpose of extracting some teeth, and that she has never recovered from the effects of same. A woman in Brooklyn sued a dentist to recover \$3 which she claimed she overpaid him. The judge threw the case out of court.

CONSUMPTION OF TOBACCO.—According to recent statistics, the average consumption of tobacco by each person in the various countries of the world is as follows: Netherlands, 3,400 grams; United States, 2,110; Belgium, 1,552; Germany, 1,485; Australia, 1,400; Austria and Hungary, 1,350; Norway, 1,335; Denmark, 1,125; Canada, 1,050; Sweden, 940; France, 933; Russia, 910; Portugal, 850; England, 680; Italy, 635; Switzerland, 610; and Spain, 550.

TETANUS FROM CARIOUS TOOTH.—*El Signo Medico*, describes a case of severe tetanus which developed suddenly in a young man with no apparent portal of entry. The presence of three carious teeth and the patient's habit of picking his teeth with pins, etc., suggested that a cavity in the teeth might be the focus of infection. The physician had them drawn at once and the mouth thoroughly disinfected every morning under chloroform. The case terminated in recovery.

OHIO'S NEW DENTAL LAW.—A new dental law passed the senate in Ohio last month. It creates a state dental board, to consist of five practicing dentists, to be appointed by the governor on June 1, 1903. All applicants must present diplomas from legally chartered dental colleges, and graduates of Ohio dental colleges are exempt from examination until June 1, 1905. Those persons who were legally practicing dentistry at the time of the passage of the act are also exempt from examination.

FIRES.—C. H. Allen, New Milford, Conn., had his office burned out April 30. Dr. Green at Modesto, Cal., had a blaze on May 3 which cost him \$100. S. Pugsley of Woodstock, N. B., lost all his office effects by fire on May 6. Fire started in the office of C. C. Pierce at Nacogdoches, Tex., on April 20, and caused him a loss of \$1,000. David Rosenbaum of Philadelphia, lost \$50 by fire April 29. Fire at Neenah, Wis., caused a loss of \$300 on April 14 to W. A. Traver. W. W. Willard at Red Oak, Ia., suffered a loss of \$1,600 by fire April 24.

ROBBERIES.—The thief who robbed a dentist at Quincy, Ill., and one at Keokuk, Ia., last month is reported as still doing business in that region. Two dentists at Clinton, Ia., lost respectively \$50 and \$75. An office at Kansas City was robbed of \$10 worth of gold on May 10. The thief who has robbed dentists all over California was arrested the latter part of last month in San Francisco. He confessed to having realized over \$3,000 from his plunder in the last six months, which of course does not represent anywhere near the actual value of the stuff stolen.

MARRIED.—W. R. Anderson, Grafton, N. D., May 1. E. H. Barker, Hopkinsville, Ky., April 30. H. I. Bragg, Columbia, Mo., April 23. R. C. Craycroft, Danville, Ky., April 17. C. R. Hammet, Portsmouth, O., April 24. W. F. Kratz, Oquawka, Ill., April 16. W. D. Lowry, Davenport, Ia., April 30. V. P. Luckstone, Cincinnati, O., April 24. W. R. McLeod, Timmons ville, S. C. April 16. W. J. Mathieu, St. Anne, Ill., May 14. H. McCuskey, Moundville, W. Va., April 18. W. H. Robinson, Hartford, Conn., April 27. C. Sample, Harvard, Neb., May 7.

ACCIDENTS.—A vulcanizer in the office of C. W. Andrews, Wayland, Mich., blew up April 28, and considerably damaged the office but missed the doctor. The same thing occurred in the office of D. C. Patterson, Cyathiana, Ky., May 13. J. A. Webb of Portland, Conn., had his office damaged to the amount of \$75 on April 17 by a similar explosion. R. D. Griffiths of Paris, Tex., was exhibiting a blow-pipe of his own invention on May 14 before the Texas State Dental Association, when the gas reservoir connected with his apparatus exploded and seriously injured him. He may lose his arm in consequence.

SUPRAORBITAL REFLEX IN FACIAL PARALYSIS.—Joseph Sailer (*Phila. Med. Jour.*) speaks of the demonstration of the supraorbital reflex by D. J. McCarthy. He reports three cases which appear to prove that McCarthy's reflex is a true sensorimotor reflex, and that irritation of the supraorbital nerve may, under certain circumstances, produce contraction of the muscles of the opposite side. Also that in certain cases the reflex manifestation may extend to the other muscles which are removed to a considerable distance from the supraorbital nerve. In two of the cases there was loss of ability to move the platysma.

FAKIRS SUCCESSFUL IN OHIO.—Three Jews struck Springfield, O., in January and started the "Union Dental Co." They hired thirty or forty young girls who made a house-to-house canvas of the city, and induced poor people to sign a contract to have a certain amount of dental work done and to make a deposit in advance. These girls were not paid for their services, but were hired on the promise that whichever one brought in the largest number of contracts within a month would receive employment. What dental work these swindlers did was crude and practically worthless. It is estimated that before skipping out they cleared about \$2,000. Verily, a sucker is born every minute.

FATALITIES.—The wife of the Chilean counsel at Oakland, Cal., was seized with spasms on May 9, while having her teeth extracted, and died a few hours after. A man died in New York May 7 from blood-poisoning following the extraction of a tooth and laceration of the gum around it. A man at Homestead, Pa., is dying from blood-poisoning. While having dental work done recently the bur slipped from the tooth and passed through his tongue. A man at Hazleton, Pa., is dying from blood-poisoning resulting from the extraction of a tooth. A man in Ensley, Ala., recently had a tooth pulled, and a few days later inflammation set up in the glands of his neck. His condition is serious.

ILLEGAL PRACTITIONERS.—Last month a fakir went through Connecticut extracting teeth for twenty five cents each, and when he had taken in enough to pay his fine two or three times over he was arrested for practicing dentistry without a license. The court found him guilty on six different counts, and bound him over to the superior court under bond. This is the third time he has been caught. May 13 a young dentist in Brooklyn was held in \$300 bail for practicing without a certificate. April 21 a dentist at Everett, Wash., was fined \$50 for failure to have a license. April 24 a den-

tist at Vineland, N. J., was arrested for illegal practice. He immediately began suit in the supreme court for \$5,000 damages for false imprisonment against the county prosecutor of the state dental board. A dentist at Kelseyville, Cal., was fined \$50 last month for violating the dental law, and another at Los Angeles was arrested on May 9 for the same offense. A dentist at Baltimore was arrested April 23 for being without a license, and the same fate overtook an individual at Cass Lake, Minn.

MUCOCELE OF FRONTAL AND MAXILLARY SINUSES ON SAME SIDE.—Luc (*Archiv. Internat. de Laryngol.*) reports a case which occurred in a lady, aged twenty-nine with a swelling of the infraorbital region, and of part of the forehead on the left side. It was associated with rarefying osseous lesions. There was pain, and the eye was displaced down and out with accompanying diplopia. The frontal mucocele had existed for seven years, the maxillary for two years. The frontal sinus was opened by the Ogston-Luc method, and contained a quantity of clear yellow fluid, slightly viscid fluid. There were no granulations, the lining membrane being of normal pale color. The maxillary sinus was opened by the Caldwell-Luc method, and was found to contain no granulations, but simply a yellow, turbid, viscous, non-fetid fluid.

EXAMINING BOARD AFFAIRS.—Dr. H. A. Wilson, of Baltimore, has been appointed a member of the Maryland State Board of Dental Examiners by the governor.—On May 12 the governor of Wisconsin appointed Dr. L. L. Leslie of Janesville as a member of the State Board of Dental Examiners, to succeed Dr. W. G. Oliver of Oconto, whose term expired May 2.—The dentists of South Dakota have attacked the constitutionality of the law requiring each practitioner to pay an annual registration fee of \$2, and the case is now being argued before the lower courts.—For the first time since the organization of the Iowa State Board of Dental Examiners that body has surrendered to the state the surplus from the fees received for examinations. On May 12 the board turned over to the state what was left in the treasury.—The Appellate Court of Kentucky has affirmed the judgment of the lower court in the case of the State Board of Dental Examiners versus an individual who tried to compel the Board to issue him a certificate upon a diploma from the Western University of Chicago. The Court holds that the Board has discretionary power where proof of the character of the college or authenticity of the diploma is wanting.—The governor of New York State has signed the bill to amend the law relating to the practice of dentistry. This amendment seems to be a step backwards.

DENTISTRY IS SURGERY—Last month a judge in St. Louis decided that "The extraction of a tooth by one lawfully authorized to practice dental surgery may properly be classed as a surgical operation." The plaintiff in the case carried an accident insurance policy, and when his jaw was broken by a dentist while extracting a tooth, and he was laid up three weeks, he brought suit against the company for \$10 dollars a week. The policy contained a clause that there would be no liability because of injury from surgical treatment. The insurance company's attorney claimed that surgical

treatment included dental surgery, and the court upheld the contention. It behooves us to examine the ruling and discover what will be the logical result of its application. If having one's jaw broken by a dentist (professionally) is not an accident, it must be a design. The plaintiff in this case therefore visited the dentist with the deliberate intention of having his jaw broken, thinking to collect damages therefor. However, he did not reckon on the shrewdness of the judge which would penetrate his motives and unmask him before the world. Had he been successful there is no telling how many persons would have taken out a \$10 accident policy and had dentists break their jaws, for anyone would gladly have his jaw broken for that amount. Again, if jaw-breaking is a design, the dentist is equally responsible with the plotter, for it is not by accident that he breaks jaws.

DEFENDANT'S RIGHT TO A PERSONAL EXAMINATION.—The court of appeals of Kentucky has reversed a judgment (*Louisville & Nashville Railroad Co. vs. Simpson*) given for an alleged stiffness of two fingers. No other permanent injury was claimed, nor was the injury of the member apparent on inspection. At the trial she showed the hand to the jury, demonstrating how far she could close her fingers by the use of the muscles, and stated that the leaders and joints of the fingers were stiff and enlarged. A witness for the plaintiff testified that he could not tell by an examination of the hand whether it was permanently injured but he would have to rely upon the statement of the patient. She submitted her hand to examination while he was testifying. Subsequently the company introduced two physicians as witnesses, who testified that they could tell by an examination of the hand, without reference to what the plaintiff said, whether it was stiffened as claimed, and whether such injury was permanent. The physicians who testified for the defendant were not allowed to examine the hand, and the trial judge overruled a motion compelling her to submit to their examination. The court of appeals held that this ruling was reversible error; to permit the party suing to testify that the member was injured permanently and to deny to other competent witnesses an opportunity to examine the hand and to demonstrate if they could that it was not in fact injured, was an abuse of the discretion lodged in the trial judge.—*Jour. A. M. A.*

DENTAL COLLEGE COMMENCEMENTS.—Atlanta Dental College, Atlanta, Ga., April 28, 1902, 45 graduates. Baltimore College of Dental Surgery, Baltimore, Md., April 29, 67 graduates. Baltimore Medical College, Dental Department, Baltimore, Md., May 1. Birmingham Dental College, Birmingham, Ala., May 6, 11 graduates. Central College of Dentistry, Indianapolis, Ind., May 1, 16 graduates. Chicago College of Dental Surgery, Chicago, Ill., April 29, 208 graduates. Cincinnati College of Dental Surgery, Cincinnati, O., May 9, 10 graduates. Des Moines College of Dental Surgery, Des Moines, Ia., May 1, 11 graduates. Indiana Dental College, Indianapolis, Ind., April 29, 65 graduates. Kansas City Dental College, Kansas City, Mo., April 29, 29 graduates. Keokuk Dental College, Keokuk, Ia., April 14, 13 graduates. Louisville College of Dentistry, Louisville, Ky., May 8, 70 graduates. New Orleans College of Dentistry, New Orleans, La., May 6, 17 graduates. North

Pacific Dental College, April 30. Omaha College of Dentistry, Omaha, Neb., April 30, 16 graduates. Ohio Medical University Dental College, Columbus, O., April 15, 49 graduates. Ohio College of Dental Surgery, Cincinnati, O., May 8, 90 graduates. Pennsylvania College of Dental Surgery, Philadelphia, Pa., May 1, 90 graduates. Philadelphia Dental College, Philadelphia, Pa., May 2, 113 graduates. Pittsburg Dental College, Pittsburg, Pa., April 30, 52 graduates. University of Buffalo, Dental Dept., Buffalo, N. Y., May 6, 63 graduates. University of Illinois, School of Dentistry, Chicago, Ill., May 3, 40 graduates. University of Maryland, Dental Dept., Baltimore, Md., April 30, 58 graduates. Vanderbilt University, Dental Dept., May 8, 20 graduates.

IN MICROBE HOLLOW.—Dr. Bacillus; Hem! very serious case. Total loss of vitality. Just called me in time. You must move to a healthy, congenial



resort and recuperate. I would advise a season in the tenement district of New York. It will strengthen and fatten you.—*Life*.

BLOOD SUPPLY; ITS EFFECT ON THOUGHT.—Under the name of "muscle-bed," says *American Medicine*, a device has been invented by Dr. William Anderson, of the Yale gymnasium, for testing in the horizontal human body the distribution of the blood supply under the effect of thought and exercise, and of ascertaining the center of gravity. This apparatus rests on very accurately made knife edges, and is sensitive to the slightest pressure; it is furnished with levels, graduated scales, and indicator for recording. A body perfectly balanced on the sensitive knife edges of the muscle-bed will be affected by additional weight on either side of the point of equilibrium, causing the head to settle if the flow of blood is in that direction, or the feet to lower if the flow is toward them. In the case of a subject balanced on the muscle-bed who is told to answer some question requiring thought, although not a muscle was moved the rush of blood to the head caused by the mental effort created a change of the center of gravity.

CONTENTS.

ORIGINAL CONTRIBUTIONS—

Oral Prophylaxis,	By D. D. SMITH	347
Terminology Squib,	By W. A. MILLS	366
Extracts from an Old Journal,	By McF. CROW	368
Putrescent Pulp Almost Fatal,	By W. T. McKENNEY	372
Plea for Inventive Ingenuity,	By C. W. McGUIAR	374
New Appliances and Methods,	By F. H. LEE	381
Plaster Impressions; to Release,	By D. L. ABKR	383
DIGESTS—Erysipelas Following Extraction, 381. Hollow Saddle Bridge or Dummy, 384. Cohesion of Gold, 385. Science as a Teacher of Prophylaxis, 392. Nerve Regeneration, 403. Moisture and Weak Tooth Structure, 406. Shall Young Children be Given Meat, 410. Ulceration from Carious Tooth, 414.		
LETTERS—Dock Measley Gives the Boss Some Pointers	By F. W. SAGE	415
EDITORIAL—Stockholm Meeting and Its Possibilities		420
Army and Navy Dental Bills		425
NOTICES		427
NEWS SUMMARY		433

INDEX TO ADVERTISEMENTS.

	PAGE		PAGE
American Cabinet Co.—Benches, etc.....	53	Haskell School Dentistry.....	71
American Hard Rubber Co.....	61	Hammond, John F.—Furnace.....	50
American Hardware Mfg. Co.....	32	Hall, Wm. R. & Son—Specialties.....	58
Antikamnia Chemical Co.....	2	Hance Bros. & White—Phenol Sodique.....	45
Antidolor Mfg. Co.—Anesthetic.....	50	Hisey Mfg. Co.—Anesthetic.....	60
Arndt, L.—Air Chambers.....	22	Ideal Chemical Co.—Anesthetic.....	52
Atlanta Dental College.....	68	Illinois Dental Laboratory Co.....	42
Atlas Dental Lab. Co.....	47	Illinois University—Dental College.....	70
Austin, Robt.—Specialties.....	30	Johnson & Johnson—Specialties.....	45
Baltimore College of Dental Surgery.....	75	Klewe & Co.—Jenkins' Porcelain.....	48
Bennett, G. L.—Forceps.....	24	Knapp, H. G.—Obtundant.....	46
Berry Mfg. Co.—Plate Retainer.....	63	Kress & Owen—Glyco-Thymoline, Cover page	
Berry Tooth Crown Co.....	57	Lambert Pharmacal Co.—Listerine.....	1
Birmingham Dental College.....	74	Lowry, Dr. H. S.—Crowning Outfit.....	41
Blair-Weedink Co.—Spittoon.....	56	McConnell, J. W.—Chair.....	32
Brewster, Robert—Porcelain.....	34	McKesson & Robbins..... Cover page 3	
Brown, C. P.—Bacterine.....	31	Manhattan Dental Co.—Plate Stiffeners.....	61
California Univ. Dental Dept.....	61	Marion-Sims Dental College.....	69
Chicago College Dental Surgery.....	72	Mason, L. J. & Co.—Engine.....	54
Chicago Post-Graduate Dental College.....	67	Meler D. M. Co.—Specialties.....	40
Chicago Water Motor & Fan Co.....	26	Miller, C. W.—Pliers.....	39
Cincinnati Coll. Dental Surgery.....	72	Minn. Univ.—Coll. of Dentistry.....	79
Clark, A. C. & Co.—Spittoon.....	36, 37	Missouri Dental College.....	68
Dee, Thos. J. & Co.—Refiners.....	55	Morgan & Wright.....	39
Detroit Dental Mfg. Co.—Specialties.....	59	Morgan-Maxfield—Disk Mandrel.....	41
Dental Protective Supply Co.—		Morgan, Hastings & Co.—Gold Foil, etc.....	65
Angle Attachment.....	10	Munson, C. W.—Teeth.....	62
Ductile Alloy.....	17	Murray & Corby—Coats.....	26
Fellowship Alloy..... Cover 4, 25		New York College of Dentistry.....	73
Fellowship Burs.....	6	New York Dental School.....	78
Fellowship Cement.....	11	Northwestern Univ.—Dental Dept.....	76
Fellowship Teeth.....	15	Oakland Chem. Co.—Hydrogen Dioxid.....	3
Fellowship Twist Broaches.....	12	Odontunder—Anesthetic.....	60
Fellowship Broaches.....	13	Ohio College of Dental Surgery.....	74
Fellowship Dental Engine.....	14	Parke, Davis & Co.....	5
Fellowship Handpiece.....	8, 9	Peck, A. E.—Inlay System.....	58
Fellowship Lathe.....	19	Penna. College of Dental Surgery.....	77
Fellowship Crowns.....	18	Philadelphia Optical College.....	38
Fellowship Slip-Joint.....	21	Polk, R. L.—Register.....	42
Fellowship Right-Angle Mallet.....	16	Rutherford, A. P.—Specialties.....	32
Mail Orders, etc.....	60	Sanitol Co.—Sanitol.....	2
Repair Work.....	7	Scharmann, G.—Cement and Burs.....	49
Rubber Dam.....	23	Schering & Glatz—Eucalin.....	61
Vulcanite Rubber.....	20	Sims Hydraulic Engine Co.....	33
Driskill, T. F.—Specialties.....	46	So. Calif. Univ. Coll. of Dentistry.....	79
Ford, B. M.—Private Class.....	38	Star Specialty Co.....	46
Gesswein, F. W. Co.—Ruby Crystal.....	22	Stowe & Eddy Co.—Laboratory.....	41
Gilbert, S. E. D. M. Co.—Specialties.....	44	Teague, D. S. Co.—Specialties.....	29
Goldsmith Bros.—Refiners.....	65	Terraplastica Mfg. Co.—Specialties.....	35
Goodrich, B. F. Co.—Rubber.....	27	Turner Brass Works—Furnaces.....	43
Gould, A. P. Co.—Chair.....	27	Twist, Dr. J. F.—Crowning Outfit.....	51
Graves, E. L.—Tooth Powder..... Cover page		Vegetol Co. Vegetol.....	31
Green, L. O.—Acestoria.....	28	Willson, H. B.—Patents.....	35
Howard, C. T.—Strips.....	38	Western Reserve Univ.—Coll. of Dentistry.....	79
Harvard University—Dental Dept.....	79		